SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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COAL MINING:

AS IT WAS, AS IT IS, AND AS IT OUGHT TO BE.

[CONCLUDED.]

I have now to discuss the most important part of my subject—"MINING AS IT OUGHT TO BE," and in the discussion of this section of the subject I fully expect to encounter some difference of opinion, and opposition to my views; I venture, however, to ask that, however you may differ from me on any point, you will "hear me patiently:" and the first point on which I want to see some reform effected in our mining operations is in the pumping arrangements. I confess that I think considerable improvement might be made by the adoption of the direct system of pumping—that is, placing the cylinder of the engine over the shaft, so as to bring the piston of the engine perpendicular with the pumping-rods; this makes the application of the power *direct*, and prevents friction. I am aware that in some cases this may be difficult of adoption on account of the smallness of the shafts, and from the want of room at the surface, but in most cases of laying out new collieries it can be adopted with advantage, and by a little care can be so arranged as to allow of the whole of the pumping arrangements being placed below the level of the pit bank, and if desirable covered by the surface plates at the pit top. One advantage of this arrangement is, that it does away with the danger of the beam breaking, as was unfortunately the case at Hartley Colliery, and which proved so fatal. In the plan I have proposed a balance-beam can be put behind the engine, so as to balance the work to be done one way. Perhaps the next best plan of avoiding the danger of the breaking of the pump-beam is the adoption of a wrought-iron beam, as in the case I have already referred to at the Clay Cross Colliery. The use of iron shoes, or guides, for the pump-rods will also be found to work well, and save a considerable amount of friction, as compared with wooden guides, which are generally adopted.

II.—The sanitary condition of mines is another matter requiring attention and reform. At present the removal of decayed wood, human excrement, animal deposits, and so on, is not, I fear, carried out so generally and so systematically as it should be. I know from experience that there are difficulties in the way of carrying out a reform of this kind, but that it ought to be done, and that it can be done, and that it *will* ultimately be done, I have no manner of doubt; and my object in calling attention to it to night is to stimulate you in your future course, and in the various responsible posts which I hope it will be your privilege to fill, to see to it that the sanitary condition of the mines under your care is improved. I might if it were necessary find an additional argument in favour of sanitary reform in the fact that science and experience has taught us the vast benefits and blessings that have been, and will yet be, conferred upon our towns by means of sanitary improvements.

III.—The ventilation of mines is also, I believe, capable of improvement. I think that every possible means should be adopted of carrying the air *direct by the shortest route to the working face*, making it course past that face, so that the men may all work in the freshest of air. Nor do I think that we have yet learnt, as we might learn, the value and importance of large wind-ways and air courses. I confess that I do not believe half so much in hot upcast shafts as I do in lessening the friction of the air and the "drag" of the mine, by means of an ample area in the air-ways. The loss of labour, as well as the loss of life, from insufficient and imperfect ventilation is still terrible to contemplate. I know mines where I am sure one-quarter, or even one-third, of the labour of the mine is lost from a want of ventilation—that is, supposing a colliery to pay 400*l.* a week in wages, I have no hesitation in saying 100*l.* a week of that is thrown away from the want of air. The candle burning "upright," as it is called—that is, not going quite out, is often thought enough, but long before the candle burns dim air is too impure to support life vigorously, and hence there is a loss of power and energy, the result of which is injurious to the health of the miner, and the pocket of the coal owner. I think I know cases where even a greater loss than I have named is sustained for want of proper ventilation. While upon this subject I may remark that I hope the time will soon come when bratticed shafts shall be altogether abandoned, and no colliery shall be worked without two distinct shafts, either divided by natural strata or strong mason-work. The temperature of the working faces in the mine is also a subject requiring much more attention than it has yet received. There is a great loss of labour where men work in too high a temperature. It is, of course, impossible to fix any absolute limit to the temperature in which it may be permissable for men to work, but I may remark that when the temperature is above 60° the loss of labour power becomes very great. In Cornwall, among the metal mines, the want of attention to this point I am persuaded in many cases leads to the loss of at least one-half the labour of the miners, and to a corresponding loss in the profits of the "adventurers." This is a subject well worthy the attention of all who are engaged in mining.

IV.—The amount of Government control to which it may be wise to subject mining, in the future, is an important subject, and one that deserves to be well considered. We have now had twelve years' experience upon which to found our opinions as to the probable result of more stringent legislation, and I confess the conclusions to which I have been brought are —1. That no amount of Government control will tend very much directly to diminish the accidents in mines; and I found this opinion upon the fact that the last twelve years do not, so far as I can ascertain, show any marked reduction in the number of fatal accidents; and—2. I think that too much interference and control in the management of mines, on the part of Government, will tend to *lessen individual responsibility* and care; because, if power is placed in the hands of Government to say how mines shall be managed, there must, of course, be a corresponding amount of responsibility. It would never be tolerated that coalowners should have no control in the management of their works, and yet should be made responsible for that management; and I am satisfied that any shifting of the responsibility would tend to the increase, and not the decrease, of accidents. I am quite prepared to admit that up to the present point (with some exceptions) Government inspection has been attended with good results, and that, on the whole, the appointment of gentlemen to the responsible office of Inspectors has been wisely exercised, and in no case do I believe this has been more strikingly the case than in the appointment of our esteemed Chairman; but I confess my hope as to the future lessening of accidents in the working of mines is more in connection with the gradual but decided improvement that is going on in the education of the working colliers, and the increased intelligence and responsibility evinced by their employers, and which it is the object of this school still further to cultivate, than in legislative interference.

V.—The amount of supervision to be exercised in the different branches of mining is another very important subject. Here, I believe, much can be done to lessen accidents and increase efficiency. My experience is that nothing pays so well in mining operations as constant and intelligent supervision. It is impossible to lay down positive rules on this point, as the circumstances under which the supervision has to be exercised varies so constantly and completely. I may, however, say that every working face ought to be visited at least once every shift and thoroughly inspected, and that in cases of special danger the visits should be more frequent, and the inspection more complete. To train up men qualified for this important work is one of the main aims of this school.

VI.—In the future working of mines in this country, I am of opinion that some alteration (I can hardly undertake to say what alteration) should be made relative to the working of different properties adjoining each other. Anyone of mining experience knows how awkwardly and disadvantageously mines have to be worked through the pig-headed obstinacy or overreaching cupidity of the owners of adjoining properties; and I think that under some circumstances there is an urgent call for such an alteration of the laws as will prevent the sacrifice of valuable mineral that is now often caused, and the danger and anxiety resulting from the "dog in the manger" policy too often exhibited by rival coalowners and landowners. I may take some further opportunity of discussing the best remedy for this state of things, but at present I think it only necessary to call attention to an admitted evil, leaving it to the wisdom of others to provide a remedy.

VII.—Intimately connected with the last point is the subject of royalties, and I unhesitatingly say that I believe that the development of mining is being sadly retarded in this country by the excessive and exorbitant royalties now being asked by the owners of mining property; and not only is this policy injurious to the interest of the country generally, but it is also injurious to the lessor, for in all cases where excessive royalties are levied you will find only the more profitable coal is brought to bank. I am persuaded it would vastly tend to the advantage of all parties directly engaged in mining, and to the increase of our national wealth, if less royalty per ton was charged; but more stringent clauses introduced into leases, for the clearing of the whole of the coal, and the working of the mine in a more safe and systematic manner.

VIII.—There can also, doubtless, be some improvement yet made in the mode of winding coal up the shaft. There are still a large number of small and ill-regulated collieries, worked without guides or conductors, and some with most imperfect chain and wire-rope guides. The adoption of Ogden's steam-brake to all winding machines would, I think, much tend to prevent accidents from over-winding and other causes. The universal adoption of high-pressure engines for winding, as being less complicated and liable to derangement, would also, I think, tend to safety and economy. More simple and effective arrangements for fastening the tubs or corves in the cages, while ascending and descending; the machinery so arranged as to give the engineman more command of the pit-bank; and the universal adoption of fence-gates, &c., at the top of the pit would all, I think, tend to the improvement and safety of mining.

IX.—I come now to consider a question of vast importance in connection with mining, and one that deserves the best attention of all who are interested in the future progress and prosperity of coal working—the possibility or otherwise of applying machinery to the cutting of coal. That it can be done, under certain conditions, is happily now no longer a matter of speculation. Various machines have been devised for effecting this most important operation both in this country and on the Continent; but the machine that seems most likely to pave the way to some practical results is that patented by Messrs. Firth and Co., of Ardsley Colliery, near Leeds, where it has now been at work for some months, and, according to a report I have lately read, has been applied with considerable advantage and economy. I have not time at present fully to discuss the subject of coal cutting by machinery, but I may just explain that the *modus operandi* by which the machine in question is worked is as follows:—An ordinary high-pressure engine is fixed above ground for pumping air into an air-receiver, made in the cylindrical form, 30 feet long and 3 feet 6 inches diameter; the cylinder of the engine is 20 inches, stroke 3 feet, worked at a pressure of from 35 lbs. to 40 lbs. The valve of the air-receiver is weighted at about 55 lbs. pressure; from the receiver to the pit, and down ditto, the air is conducted through flange-pipes, 4½ inches diameter; from the bottom of the shaft to the end of main road the air is carried by means of 2½-in. pipes, and the branch pipes for conducting the air to the working faces are ¾ in. diameter; and in the pit in question the total length along which the compressed air is carried is about 1100 yards. At the end of the ¾-inch pipes an India-rubber tube is attached, which can be moved up and down the working face, so as to shift with the machine during the operation of cutting. Having brought the motive-power to the face, I have now to describe briefly the way in which it is applied; and I may state, for the information of those who have not read the account before,* that the mode of working is simply by means of a small engine, worked by compressed air, like an ordinary high-pressure steam-engine, so constructed that it can work in a 3 feet 6 inches seam; it is about 2 feet 6 inches broad and 4 feet long; weight, about 14 cwts., the whole mounted on four flange wheels, and made to traverse a road laid up often to the face that has to be cut; a width of 3 ft. 6 in. is required between the props and the working face for the machinery to work in. The cylinder of the engine is about 5 in. diameter, with a 12-in. stroke; a crank-arm is attached to the cross-head of the piston, in which is fixed a pick, like the hand-picks now in use, and the depth to which the holing is to be made is determined by the length of the arm. The plan adopted at Ardsley Colliery is to hole about 3 feet under the coal in three cuttings, the first being 16 in. or 18 in., the second 10 in. or 11 in., and the third 8 in. or 10 in. The operation usually takes one minute for every lineal foot of holing cut 3 feet deep. The machine is worked by a man and a boy, and the cost is said to be—for attending machine, clearing the holing, and working the engine on the surface, 1½d. per ton; and 1d. per ton extra, I am told, will, on a get of 500 tons per day, cover the interest on the outlay and the wear and tear of machinery. Apart from the direct saving in the cost of cutting coal the inventor claims other advantages—1, that the result is a considerable extra yield of large or round coal; 2, a great improvement in the ventilation, by the discharge of the air used in working the machine at the working face; and, 3, a considerable diminution in the liability to accident from falls of roof and coal. I cannot, from personal inspection, speak of the advantages of this machine, but the subject is so important that every effort made towards the accomplishment of the desired end should be hailed with pleasure, and encouraged. I ought, in justice, to state that this machine can only be applied with advantage—1, where the seams are nearly flat; 2, where they are regular, and the roof pretty good; and, 3, where long work is adopted.

X.—I have now only, in conclusion, to refer to the bearing of the various improvements to which I have referred upon the future happiness and comfort of the working miners, and to point out a way in which I think that comfort may be greatly promoted, I have already said that improvements in the mode of working mines, and in the machinery employed, are sure in the end to promote the interest and prosperity of those engaged in the work; but there is one way in which I think the comfort and health of working miners might be greatly promoted, though I honestly confess that up to the present time I have not seen my way clear to its adoption. I dare say you have noticed the fact that many of the colliers live some distance from their work, and that often when returning from the mine they look like "sweeps," and are often wet and uncomfortable, and then on returning to their homes there is probably very little provision for washing, so that they too frequently sit at home for hours dirty and wet. I think if the men could be brought to adopt the plan of keeping their pit dress at the mine, and changing it when they came to work, and washing and changing when they came out of the pit, a vast improvement in the social and moral condition of miners would be effected, and their physical health would be vastly improved. Of course, proper accommodation would have to be provided at the mine for bathing, washing, drying, and taking care of the pit clothes of the men; but I see no difficulty that cannot be overcome by patience and perseverance, and I, therefore, venture to recommend the subject to your consideration and attention. I have now to apologise for what I fear has been a tedious lecture, and sincerely wishing the students of this institution prosperity and honour in their future progress, and also wishing prosperity to the Bristol Mining School, and the great mining interest of this country, I beg to close the first session of 1863, with a hope that what I have said to night may in some small degree help to make coal mining in this country what "it should be."

A most cordial vote of thanks to the lecturer was moved by Mr. Brough, seconded by Mr. C. Goodwin, and carried unanimously.

* We may inform Mr. Cossham that reference was originally made to the Coal-cutting Machine in the weekly letter of our local correspondent (who has kept our readers well informed as to its progress), published in the *Mining Journal* of June 14, 1862: it was again alluded to in Mr. Waring's paper, read before the South Wales Institute of Engineers, and reported in the Journal of September 20, 1862; and that the description of the "*modus operandi* by which the machine in question is worked," was published almost verbatim, as Mr. Cossham has given it, in Mr. Ridley's letter (Mr. Ridley is one of the inventors), in the Journal of April 25 of the present year. Mr. Kidley's communication contains, however, more ample details as to the cost of working. Mr. Cossham remarks that the machine in use at the West Ardsley Coal Company's colliery is "*likely* to pave the way to *some* practical results," which is scarcely just, considering that he records the fact immediately afterwards that it has now been at work for some months with considerable advantage and economy. The notice from which Mr. Cossham derives his information appeared in our local correspondent's letter of June 25. He remarked—"The writer of the following has observed some unfavourable notices of the machine in the Journal, and being a disinterested party, who has carefully watched its operations for a long period, he feels that it is only just to the inventors to state a few facts. The Coal-cutting Machine has been working successfully for several months at the West Ardsley Colliery, near Leeds, and which is the property of the inventors of the machine. In the practicability and economy of the machine the most sanguine anticipations of the inventors have been realised. The holing, or kirving, has been and is being done at one-third the cost of that by manual labour, and with a greater yield of large coals, the advantages in cost being about 6s. per ton. In a stronger or harder seam than the West Ardsley the saving in labour will be more and the yield of coals greater. The holing with the machine is simply a groove parallel with the inclination of the strata, and 3 to 4 in. deep, cut either in the coal or the floor, which is certainly more satisfactory than the larger space cut out and made into slack by manual labour. Two men and one boy attend a machine, which holes or kirves 100 yards 3 feet under in eight hours. During the several months that the machine has been working there has not been any displacement of the pipes which convey the compressed air from the surface to it, nor any other difficulty to interfere with the operations. At an extensive colliery in Lancashire arrangements will be shortly completed for applying machines, and other coalowners are preparing for their introduction."

PROGRESSIVE APPLICATION OF MACHINERY TO MINING PURPOSES.—Amongst the contributions to the history of the coal trade by the late Mr. Thomas J. Taylor, was a highly interesting paper read before the Birmingham Institution of Mechanical Engineers at their meeting at Newcastle-on-Tyne, and as some interest now attaches to the subject it may not be uninteresting to the readers of the *Mining Journal* to point out the chief information given. Mr. Taylor carefully traced the several processes and mechanical appliances employed in the Newcastle coal field from the earliest times, with the various improvements gradually effected, and the progressive applications of machinery introduced into the different branches of coal mining in that district. In the earlier periods the coal was worked only when lying within such a depth below the surface of the ground as allowed of natural drainage by an open adit, along which both water and coals were brought; no special provision for ventilation of the pits was then required, and none but the rudest contrivances for bringing the coals to the surface. As the depth of the pits increased mechanical appliances became necessary for these purposes, and power was obtained by water-wheels or horses employed in working windlasses for raising the coals and bucket, or chain pumps for draining the pit. Subsequently the introduction and gradual improvement of the steam-engine and its employment for the drainage of mines allowed a great extension of mining; but it was not until within a comparatively recent period that the steam-engine was applied directly to winding the coals to the surface, having been used previously to pump water from the mine for driving a water-wheel to raise the coal—an ingenious plan of double water-wheel, with buckets set in opposite directions, being employed in reversing the motion in winding. The quantity of water raised from some of the mines in that district is very great, and becomes the most important consideration as to the power required, in consequence of the average weight of water to be raised exceeding that of the coal, being in some cases eight tons of water to one ton of coal, and in one instance nearly thirty times as much water as coal. A simpler construction of direct-acting engine was described as being introduced in place of the large beam engines. With regard to ventilation of mines, the furnace system has continued almost unaltered to

the present day in the northern coa field, the current of air through the mine being produced by the rarefaction of the air in the upcast shaft by means of a furnace at the bottom of the shaft. This system of ventilation is universally used in the mines of that district; and although several plans of ventilation by mechanical appliances have been invented, the preference is still given to the furnace, on account of the certainty and simplicity of its action and the quantity of air supplied being much greater than hitherto obtained by mechanical means. At the same time its disadvantages are felt, such as the injury caused by the corrosion of iron tubbing in the shafts; and the application of the fuel is theoretically inferior in economy, though this is a point of less moment there than in any other district, in consequence of the coals having to be prepared for market by screening, to separate the small coal, which would be of little use if not burnt under the engine boilers and in the ventilating furnaces. The points to be kept in view in attempting the substitution of mechanical means for furnace ventilation are, that the same quantity of air should be supplied, that the supply should be equally constant and certain, and attended with greater economy. The progress and gradual development of railways in the colliery districts was referred to; and the great need at the present time of improvements in the underground arrangements for conveyance of the coal was urged, the cost of conveyance underground being three or four times that above ground; and a notice was given of the rapid advances in coal mining already realised by the development and extended application of the powers of the steam-engine. The paper was illustrated by an extensive and interesting series of diagrams.

FOREIGN MINING AND METALLURGY.

The price of copper has displayed an upward tendency at Paris, but the advance, which appears probable, is not yet fully established. Chilian is quoted 89*l.* to 90*l.*; Corocoro mineral, 92*l.*; English, 93*l.*; and Lake Superior, 103*l.* to 104*l.* At Havre, Chilian remains in good request, at previously established rates; several lots have been dealt in at 88*l.* 8s. per ton. Lake Superior has also found buyers, the Minesota mark making 100*l.*, and the Quincy 99*l* Prices at Marseilles at the last dates were as follows:—Toka, 92*l.*; Spanish, 88*l.*; red rolled for sheathing, 100*l.*; yellow ditto, 88*l.* At Hamburg the article is in a very favourable position; holders maintain a very reserved attitude, and some of them have already withdrawn from the market; on the whole, English is rising, and other descriptions are firm without change. At Berlin and Cologne the article has been in good demand, but less confidence is displayed in an advance on these prices. Although a slight reaction has appeared in tin since the late public sales the article remains, nevertheless, in a good position. At Amsterdam and Rotterdam, Banca has fallen from 78 fls. to 77¼ fls., at which the market remained sellers. Prices have also given way a little at Paris, (except as regards English; the last quotations were—Banca, 136*l.*; Detroit, 134*l.*; and English, 124*l.* English tin has remained without variation at Hamburg, but, on the other hand, Banca has been tending upward. Berlin and Cologne have been firm at preceding rates. There have been few transactions in lead at Paris, but prices have been sustained, rough French making 22*l.*; Spanish, 22*l.* 4s.; and rolled and in pipes, 24*l.* to 24*l.* 16s. At Marseilles the last rates were—Lead in saumons, first fusion, 19*l.* 2s.; ditto, second fusion, 18*l.* 16s.; argentiferous, 19*l.* 4s.; rolled, 21*l.* 4s. Lead is neglected at Hamburg, but no change is noted in prices. Berlin and Cologne have been quiet at the former rates. In zinc there is at last some revival. The favourable quotations from the English market have hardened quotations at Paris, and rough Silesian has risen to 18*l.* 14s., rolled making 22*l.* 16s. to 23*l.* 4s. per ton. At Breslau, the market is also very firm.

The production of the various companies carrying on coal mining operations in the Pas-de-Calais is returned as follows, as compared with 1861:

Company.	1861.	1862.	Company.	1861.	1862.
Dourges ....Tons	45,928	57,385	Fléchinelle..Tons	7,152	5,572
Courrières	94,047	102,850	Auchy-au-Bois	12,221	14,405
Lens	159,895	185,927	Vendin	5,415	7,940
Bully Grenay	100,364	163,197	Meurchin	37,924	40,667
Nœux	85,555	115,090	Carvin	37,478	60,040
Bruay	59,032	59,984	Ostricourt	15,868	21,220
Marles	61,236	57,406	Lievin	26,740	22,043
Ferfay	38,388	38,605			
Total				803,793	963,880

In the current year the production of this increasingly important basin is expected to exceed 1,000,000 tons.

The efflux of another year has flooded us with a mass of statistical information with reference to the position of coal mining industry in Belgium. The coal basin of Belgium traverses the three provinces of Liége, Hainaut, and Namur, and we propose to examine in detail the position of each, beginning with Hainaut. Details of the most precise character are furnished by M. Gonot, Engineer-in-Chief of Mines for the province, in his report for 1862; and to give the reader a good idea of the state of mineral industry in all its branches in the locality, we cannot do better than carefully go through M. Gonot's painstaking essay. The basin of the province of Hainaut is divided into three mining arrondissements—Mons, the Centre, and Charleroi. The working of collieries has attained a great development in each of these arrondissements, and the competition which exists between them only increases their activity and their efforts to attain the most favourable conditions of extraction and transport for their products. Taking the entire province, the extraction of coal last year was below the quantity obtained in 1861; but it will be seen by the annexed retrospective glance of the extraction of the last 18 years, that a very decided progress has been effected during that period:—

Year.	Coal extracted.	Selling value.	Year.	Coal extracted.	Selling value.
1845 ....Tons	3,670,484	£1,468,194	1854 ....Tons	6,154,860	£2,663,323
1846	3,798,325	1,429,693	1855	6,458,416	3,301,842
1847	4,201,551	1,531,038	1856	6,219,132	3,348,381
1848	3,654,742	1,259,384	1857	6,441,182	3,199,963
1849	4,018,195	1,226,353	1858	6,855,011	3,289,905
1850	4,410,761	1,466,217	1859	7,099,326	3,351,777
1851	4,753,186	1,570,453	1860	7,506,720	3,471,757
1852	5,234,646	1,687,650	1861	7,985,645	3,562,839
1853	5,482,771	1,912,391	1862	7,795,170	3,361,700

The total production of the basin in 1862 was made up as follows:—Mons, 2,974,731 tons (against 3,247,960 tons in 1861); Centre, 1,277,459 tons (against 1,233,005 tons in 1861); and Charleroi, 3,542,980 tons (against 3,454,680 tons in 1861). The conditions of working were rendered less costly last year than in 1861. Thus the return price per ton was 8s. 3d., showing a reduction of within a fraction of 2d. per ton, as compared with 1861. The number of workmen employed, and their wages, were also reduced last year. Analysing these results more minutely as regards the different groups, we find that the average annual wages paid per man were reduced to the extent of 3*l.* 8s. 6d. in the Mons district, and 1*l.* 3s. 2d. in the Charleroi district, but they were increased to the extent of 18s. 5d. in the central district. The extraordinary expenses and preparatory works on first establishment account were a little lower last year than in 1861. The extraction per pit in activity, as compared with 1861, was less at Mons and Charleroi, and greater in the Centre; per man employed it was 2 tons less at Mons and in the Centre, and, on the contrary, 2 tons more at Charleroi. The sale price generally fell last year, the reduction for the entire province averaging nearly 4¼d. per ton. Of a total of 84 mines in activity, 51 realised profits; of these latter, 17 were in the Mons district, 7 in the Centre, and 27 at Charleroi. The remaining 33 experienced losses, and of these 12 were in the Mons district, 8 in the Centre, and 13 at Charleroi. On the whole, the general profit per ton was as nearly as possible 7¾d. in the Mons group, 1s. 4d. per ton in the Central group, and 7d. per ton in the Charleroi group. Some works for deepening pits were undertaken last year, and among the deepest pits may now be mentioned the Simon-Lambert, of the Viviers-Réunis, at Gilly (2856 feet). The imports of coal into, and the exports of coal from, Belgium, during the last three years, may be stated as follows:—

Imports.	1860.	1861.	1862.
From England.....Tons	42,986	35,704	21,068
France	52,865	51,438	54,437
Other countries	1,156	2,659	3,312
Total	97,009	92,780	78,817
Exports.	**1860.**	**1861.**	**1862.**
Into the Low Countries.....Tons	144,085	145,611	137,724
France	3,298,299	3,218,153	3,138,318
Other countries	7,929	15,287	14,553
Total	3,450,306	3,379,051	3,290,595

It may be interesting to add a few particulars with regard to the working of the iron minerals, quarries, and various works of the province (blast-furnaces, foundries, refineries, glass-works, &c.) Of 124 collieries, 86 have been in activity, employing 1393 steam-engines for drainage, extraction, ventilation, &c., purposes, representing a force of 74,920 horses. These collieries employed 40,734 workpeople, and produced the quantity and value of coal indicated above. The province had last year 171 seats of extraction of iron minerals, both open to the sky and subterranean; these employed 850 workpeople, and produced 146,910 tons of washed minerals, of the total value of 51,860*l.* The 451 quarries produced stone of the value of 473,715*l.*, employing 9688 workpeople, and 120 steam-engines, of a total force of 9688 horses. It appears that three blast-furnaces worked with charcoal still exist in the province, but none of these were put in activity last year. Of 44 blast-furnaces worked with coke, there were 25 in working, employing 2443 persons and 52 engines, of a collective force of 2242 horses; they produced 208,750 tons of pig (casting and refining), of a total value of 675,618*l.* The refineries of iron worked with charcoal and coal employed last year 3941 persons and 105 engines, of the force of 3620 horses, and produced 128,974 tons of iron, of the estimated value of 901,836*l.* The plat-ineries, employing 1457 persons and 9 engines, of the force of 119 horses, produced 3350 tons of worked iron, of the estimated value of 45,431*l.* The 65 iron foundries in activity in the province in 1862 employed 1113 persons and 46 engines, of the force of 727 horses, and produced 27,177 tons of cast-pig, representing a value of 190,430*l.* Of two steel manufactories, one was in operation last year, employing 30 workpeople and 3 engines, of the force of 41 horses; it produced 100 tons of steel, of the value of 4800*l.* Of 39 glass works, 36 were in activity in 1862; they employed 3676 workpeople and 20 engines, of a total force of 364 horses, and their production represented a sum of 405,256*l.* On the whole, the value of the mineral and industrial production of the province in 1862 may be estimated approximately at 6,109,847*l.* Notwithstanding the difficulties occasioned by the American troubles, it will be seen that Belgian industry is well maintained.

The Belgian iron market has not experienced any material modification, but, although the quotations of iron and pig have not undergone any change, prices vary generally according to the importance of contracts. In the Liége district the ironworks are provided with numerous orders for merchants' irons and plates, are in full activity, and even refuse further offers of employment. The products manufactured, however, are generally intended for export, and leave little profit. The Ougrée blast-furnaces have just concluded two contracts, each for 6000 tons of pig, with two ironworks of the province of Liége. The moderate terms on which these contracts have been concluded will enable the works to grapple successfully with the competition of English iron in Holland, Switzerland, and the North of Europe. On the other hand, it is stated that two or three furnaces in the Liége basin will soon be put out of blast. An adjudication for the delivery of 5000 tons of rails required by the Great Luxembourg Railway Company took place last week, and several Belgian works tendered. The company exacted in the specification prepared (in imitation of the proviso introduced by the administration of Belgian state railways) a guarantee of five years, but the firms which submitted tenders all stipulated that they should be understood to give a guarantee of three years only. Among the tenders delivered was one by Messrs. de Dorlodot at 5*l.* 15s. 11d. per ton; Messrs. Biondiaux and Co., of Thy-le-Château, at 5*l.* 19s. 2d. per ton; and the Châtelineau Company at 6*l.* 4s. per ton. As regards France, we note that the forges and iron works of Framont, in the canton of Sellermeek, in the department of the Vosges, are to be offered for sale on Thursday, July 30. The biddings are to commence at the sum of 5600*l.* The establishment, besides conducting general operations as a forge and iron works, has united with it the working of mines of ironstone, rich bearings of iron and copper pyrites, and a blast-furnace. The tone of the St. Dizier market has much improved, and it is expected that prices will harden during the next few days. This confidence appears to be generally shared, if one may judge from the orders which have been forwarded during the past fortnight; some of these are important, and have come to hand from houses of the first order at Paris and Lyons. The orders from the South refer principally to sheets and hoops, while those from Paris comprise all descriptions of irons. The amelioration will, it is anticipated, be sustained as soon as the railway companies have adjudicated the important deliveries of rails required as well for the maintenance of lines in working as for the establishment of the second network. These adjudications, of which one comprising 50,000 tons has already taken place, will give great activity to the works producing rails, and will, there is every probability, exert a most happy influence on the French iron trade generally. With such a state of affairs comparatively few transactions have been concluded in pig of late, both producers and intending purchasers remaining in an attitude of expectation—the former in the hope of selling better, and the latter waiting until they can come to more decided conclusions as to the prospects of business. The last offers of pig at St. Dizier were made at 5*l.* per ton, and this was the rate of the last important transaction (wood-produced pig); at present it is held at 5*l.* 2s. per ton. Irons are quoted as follows:—Rolled from wood-produced pig, 9*l.* to 9*l.* 8s. per ton, according to the works, the rate of 9*l.* per ton being rarely accepted, while in all cases firms refuse to engage themselves in deliveries for long terms; mixed from 8*l.* 12s. to 8*l.* 14s. per ton; and hammered, 10*l.* 12s. per ton for bars, and 11*l.* 8s. per ton for axles. The scale between the classes of rolled irons is 4s. to 8s. per ton, and between the classes of mixed irons 8s. per ton. Arrangements have been in progress during the last few days with a view to the constitution of a great industrial company, under the patronage of M. Paulin-Talabot, and the capital of which is to amount to 800,000*l.* The object of this enterprise is the working of the Bona Iron Mines in Algeria, and the amalgamation, under its direction, of the forges of Firminy, the collieries of the Bessèges basin, and the steel works and blast-furnaces of Alby and Toulouse. Another company has also been organised to "work" the mineral waters of the Auvergne. July marks an important date in the rather complex industrial organisation of France, being the period selected by the majority of great companies for the payment of interests and dividends. It is estimated that nearly 12,000,000*l.* will thus be paid to the public, to be re-absorbed in the endless new enterprises, emissions, &c., submitted to the notice of the French money interest.

MINING IN AUSTRALASIA—MONTHLY SUMMARY.

ADELAIDE, MAY 26.—There is a good enquiry for galvanized iron, and stocks are very low. Wire is not quite so firm. Pig-iron is also lower. The price of copper has been reduced at the board meeting of the South Australian Mining Association to 87*l.* per ton, nett cash; Wallaroo, 88*l.* to 89*l.* Coals continue without much change, but arrivals are not so numerous as they were last month. The Burra Burra Mining Company have declared a 52d dividend, of 100 per cent.; the shares are at 96*l.* The Moonta Mining Company have declared a dividend of 5*l.* per share.

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL GOLD.—The directors have received, by telegram from Malta, the following advices in anticipation of the Australian mail, from their resident director, Mr. Bland, at Melbourne, giving the result of the month of April last:—Quantity of quartz crushed, 3210 tons; yield per ton, gold, 12 dwts.; receipts, 3210*l.*; payments, 1550*l.*; profit, 1690*l.*; remittance, 2000*l.*

KAPUNDA.—The directors have advices to May 26 from their manager, who reports that the various tribute pitches were looking much as they had done for some time, and that all the underground works were going on steadily, and the sinking of the principal shaft below the 60 was progressing satisfactorily. The quantity of ores raised in March was 259 tons of 18¾ per cent. average produce, equal to 47¾ tons pure copper, in addition to which there were raised upwards of 100 tons of sulphur ores for flux, the copper in which, though not estimated, will enhance the return of metal for that month. The quantity raised in April was estimated at about 226 tons of good produce, exclusive of low quality sulphur ores. The shipments since last advices are 61¼ tons per *Anglesea*, Port Phillip to London, and 26 tons per steamer *Poorong* to Hobson's Bay, for transhipment to London.

YUDANAMUTANA.—Capt. Anthony, May 15: Yudanamutana Mine: The big lode is still yielding a similar quantity of copper ore, and of equal quality. On this section there is about 80 tons of first-class ore ready for the drays, from 35 to 40 per cent. of metal.—Wheal Gleeson Mine: The 10 fathom level, south of Henry's shaft, is driven several fathoms through a poor but well-defined lode. The stopes in the hill and level below them are yielding fair quantities of ore. There are several tons of good ore at surface on this section.—Martichudana Mine: Here we are still sinking Turniey's shaft on the course of the lode; during the past month the lode has produced some good stones of gray ore, and, on the whole, is a promising lode, but not rich.—Section 1397: Here we are driving west on the caunter lode, and are opening an excellent piece of ore ground. This caunter lode underlies north, or towards the "big bunch" on top of the hill in Yudanamutana. I like the appearance of this lode very much.—Wheal Bilnman Mine: The back of the 10 fm. level is just as it was last month, yielding a good quantity of capital ore. Martin's shaft is cased and ready for drawing ore through by the horse-whim.—Shaft No. 4: Finding no regular lode here, we commenced on Monday last to drive west, and yesterday we broke through the "cap" to what appears to be a splendid lode of soft black and red oxides and green carbonates; this speaks well for the mine, being the extreme end of the workings on the south, while Jane's shaft where we have so good a lode, is on the north end. The stopes are much better than they were last month, as indeed the mine throughout is. During the past month we have from this mine grassed and carted 25 tons of ore, and piled 150 tons; at present we are exceeding this rate of produce. The cost-sheets and ore returns (sent *via* Southampton) will show you the number of men employed, and the quantity of ore raised.

NORTH RHINE COPPER.—May 26: You will observe by the minutes, that in driving south on the eastern lode in the 8 fm. level, some good copper, composed of blue and green carbonates, has been discovered, but that at about 5 fms. from the shaft, the men had met with a cross-course, which had thrown the lode out a little to the west. We hope in our next to be in a position to report favourably of this part of the mine, as also to advise of an improvement in the 60 fm. level.

GREAT NORTHERN COPPER.—The directors' advices from Mr. Bonny, Adelaide, May 26, state:—"The report which goes home by this mail from Mr. Garland, our present captain at Nuccaleena, shows that the prospect of the mine has a little improved, the ground being easier, and the lode beginning to make ore again. We are now driving on the course of the lode east and west, and preparations are being made to sink to another level."—Capt. Garland's report, dated May 14, is as follows:—"We have finished the cutting of the plat at the whim-shaft in the 20, and commenced to drive the end east from this shaft; the ground, I am happy to say, is much easier for driving than it has been; I have set 2 fms., at 8*l.* per fm. The footwall is carrying a nice soft flookan; the lode is from 6 to 8 feet wide, composed of barytes, with spots of ore and mundic. The western end is in about 6 fms., carrying a regular footwall. The prospect of this end is looking much better; the barytes seems to be dying out, the lode being more mixed with country, yellow and black ore, and also mundic, but not sufficiently good to save as yet. The ground in the end is also changed for the better, our last price being 10*l.* per fm."

ENGLISH AND AUSTRALIAN COPPER.—The directors have advices dated Port Adelaide, May 26 last. The quantity of coal at Port Adelaide was 1768 tons, at Kapunda 1141 tons, and at Kooringa 400 tons, besides 4100 tons of wood. There were three furnaces at work at the Port works, and three furnaces and one refinery at Kooringa. At the date of these advices 85 tons of copper were in course of shipment for Calcutta.

GREAT BARRIER.—The despatches received state that the contract for cutting 1,000,000 ft. of timber in one of the company's forests, which it had been supposed would take ten months, had been completed within five months, showing the much greater facility for getting at the timber than had been anticipated. An agreement to cut and bring out another 1,000,000 ft. of timber with the same contractor had been made on more favourable terms than the first. The saw-mill would most likely be at work by the middle of last month, and the manager considers it probable that in five years, or less, the sales of timber would have amounted to 75,000*l.*, more than one-half of which should be profit. This would more than repay the present paid-up capital of the company.

WORTHING MINING COMPANY.—The following is an abstract of Capt. Thomas Priak's report upon the Bremer Mine for the month ending May 19:—"Legg's engine-shaft, in the 53 south, is not quite so wide as when I last reported, but maintains the same rich quality, and promises to continue; the ground easy for driving, and the water coming away very fast, which strongly indicates a loose lode ahead; the ground driven in the end during the month is 6 fms. 4 ft., by six men, yielding from 4 to 5 tons of ore per fm. If we make the same headway for the next three months we shall be under the big bunch in the levels above, and to make larger returns than have ever been made before in the mine. As soon as fresh catches for the main rod are put in, &c., we shall at once commence to sink the shaft under the 53.—Lode 43, south of Legg's engine-shaft: We have driven 29 ft. east through the lode, the whole of which will pay well for taking away; after taking out full 8 feet of almost solid ore we are not yet through the lode, so that it is evident the lode increases in width as it goes down, and the appearance of the lode in the winzes at the bottom of the 33 shows the quality of the ore to be equally as good above; the lode in this level will yield 10 tons per fathom in driving. In the 33, No. 1 winze has been sunk most part of the way in the horse between the caunter and main lodes; this has thrown us back a little in our sampling this month. No. 2 winze has gone down through a splendid course of ore all the way to the depth of 8 fms., and still continues as good as ever, yielding 8 tons per fathom. No. 3 winze is also a first-rate lode, the lode in this as well as No. 2 being more than the width of the winzes, which are 4 ft. by 6 within timbers, and this will yield 8 tons per fm. In the 33 end, south of Lean's shaft, we have met with a cross-course, and have two men driving east to the caunter, in order to see what it will make at this point; ground driven 16 ft. 3 in. We have also two men driving on the caunter, east of Lean's shaft, where the lode is split into several branches, varying from 1 in. to 2 ft. wide; we are stoping away a piece of the lode 2 fathoms wide, of the same character as described above. The 23 fathom winze, south of Legg's engine-shaft, is now 7 fms. 4 ft. through good ore ground, averaging 3 tons per fathom. There are still a great many fathoms of ground to stope in the back of the 23. Ore raised during the month, 155 tons. Miners employed, 49; labourers, 19; boys, 22; smiths, 2; assistants, 2; carpenter, 1; enginemen, 4; stokers, 2; and at the furnaces the same as before. Engine and machinery work well, and the dressing goes on satisfactorily. The smelting requires more furnaces, as the supply of ore is catching upon us very fast, and in a month or two will increase a great deal more, so that the sooner another furnace or two is put up the better. I consider that we have now discovered in the mine no less than from 6000 to 7000 tons of ore, and I do not hesitate to say that the mine is worth three times the value that it was when I engaged with you, ten months ago; and I am happy to say that the mine never looked near so well since I have been connected with it as now."—[They have raised 155 tons average quality during the month; shipped 44 tons of copper, and have about 15¼ tons of copper ready for next shipment.]

FORTUNE COPPER (Western Australia).—The advices received from Mr. Lionel Samson, dated Fremantle, May 23, are as follows:—Capt. Penberthy arrived here, per overland mail, on the 11th inst., and left on the 15th, to take charge of the mine, the news from which continues favourable. I have a report from Capt. Lorey, dated April 20, in which he states:—"We intersected the east lode 5 fms. from the main lode, at which point it is 4 ft. wide, and yields about 4 tons per fm. Ten men are stoping in the back of the 20, where the lode is 8 ft. wide, giving 6 tons of copper and 2 tons of lead per fm. I abstain from sending you further particulars, as Capt. Penberthy will no doubt be here in time to forward you a full report for next month."

SCOTTISH AUSTRALIAN.—May 21: Reports from the Cadiangullong Mine to the 18th, and from the Colliery to the 21st of that month. Lambton Colliery and Railway—Mr. Morshead states:—"I visited these works within the last few days, and found operations going on in a very satisfactory manner. It is likely the earthworks of the railway will be finished in a fortnight or a little more. Being desirous of having the rails in readiness to be laid down as soon as possible, we had those on board the *Strathdon* transhipped into the *William Malcuish*, and the latter vessel is now discharging her cargo at Newcastle, from which place arrangements have been made for the conveyance of our material or plant to the junction of our line with the Great Northern Railway. . . . We hope to be in a position to send coal to the port in August. I have within the last few days received a letter from Mr. ——, of South Australia, proposing to get contracts for us with some of the smelting works established in that colony, when we are ready to send coal to market. He tells me there is a favourable impression there with respect to the Lambton coal, derived from the sample I got sent there when I was in the colony at the end of last year."—Cardiagullong Mine: Captain Holman reports:—"During the month past our operations were limited to stoping southward from adit shaft on the ore floor, by six men, the produce of which has been 25 tons of copper ore of 12¼ per cent. The ores have failed in this direction, and the men are removed to stope east from said shaft just over the 12 fm. level. The yield of ore here is also declining, and we may consequently expect a less quantity in the ensuing month than is now reported. In addition to dressing the ores raised in stoping there have been hand picked from the old stock of ores 15½ tons, yielding 11¾ per cent., and a quantity of smalls, washed, yielding 5½ per cent. for copper."—Smelting Works: Captain Christoe reports:—"Up to this date we have received at the works 1223 tons 7 cwts. of Cadiangullong and Canobias ores (the latter are used as fluxes), containing 102 tons 7 cwts. 2 qrs. 8 lbs. of fine copper. We have smelted 696 tons of the former and 404 tons of the latter ores, and have on hand 122 tons, 6¾ per cent. Cadia, and 2 tons Canobias, 2 per cent. Bills of lading have been received of further shipments to London of fine copper, amounting to 46¼ tons, making, with the shipment that has already arrived, a total quantity of 57¾ tons shipped to England.

Although the lode at Cadiangullong was expected to yield further surface ores in limited quantities, Capt. Holman had seen no reason to change his opinion, as stated in the report published last month, that in the circumstances he could not recommend sinking and working this mine at a greater depth than the 23 fms. already arrived at; on the contrary, he was of opinion that the lode even in depth was not likely to reassume a character which would constitute a productive copper mine. In these circumstances it is very satisfactory to learn that Mr. Morehead has been able to secure two copper properties situated close to the Cadiangullong Mine, one to the east, called the Canobias Mine, and the other to the west, designated West Cadia, on very favourable terms, there being no royalty payable during the first year, and after that a royalty of 1-24th, the lessees not being bound to work the properties for a longer time than they may judge expedient.

The Canobies has been opened and worked by tributers. The company's portable engine was about to be removed there (though no serious quantity of water was expected), and operations commenced, when a considerable quantity of ore would be immediately raised. At West Cadia several lodes show themselves upon the surface, and very slight operations had resulted in raising a limited quantity of good ore; and here, it was believed, a depth of 200 feet might be attained without the risk of hindrance by water. The manager had determined on these operations on the very strong recommendation of Capt. Holman, who considers that these properties present such features as fully warrant the trials about to be made, and that they can be executed at a very moderate outlay until steady returns of copper ores may be available, and that no great time will elapse in ascertaining their probable value. It seems, therefore, likely that, although the Cadiangullong Mine may be relinquished, the company still possess in the same locality a good and productive mine, and that the smelting works may be permanently and profitably worked.

BON ACCORD.—No communication has been received from the committee of management at Adelaide by the present mail. They received, however, on the 4th inst., by the *Great Britain* steamer, which brought forward the South Australian letters of April, a letter dated April 25 last, from the Chairman of the committee, in which he stated that all operations at the Bon Accord property would continue to be suspended till they should receive from the board the views of the proprietary as to resuming them or otherwise. These were forwarded, after the general meeting of the company in May last, by the mail which left London in that month, and would, therefore, reach the committee in the present month.

COAL MINING IN AUSTRALIA.—At the forthcoming annual meeting of the Australian Agricultural Company the directors will have an unsatisfactory statement to make respecting their colliery operations. "The coal returns will show that the sales during the year amounted only to 63,146 tons, which cost 34,424*l.* 17s. 5d., or an average of 10s. 10¾d. per ton, and realised 38 934*l.* 5s. 11d., or an average of 12s. 4d. per ton, leaving a profit only of 4509*l.* 8s. 6d., or 1s. 5¼d. as against 92,570 tons sold in 1861, with a profit of 16,138*l.* 14s. 10d., or 3s. 5¾d. per ton. The sales in the first quarter of 1862, as quoted in my half-yearly report, dated April 17, 1862, were 28,152 tons, which cost 12,738*l.* 13s. 8d., or an average of 9s. 1¼d. per ton, and realised 17,774*l.* 18s. 5d., or an average of 12s. 7¼d. per ton, showing a profit of 3s. 6d. per ton on the sales to that date. The deficiency, therefore, arose in the last nine months of the year, and is scarcely matter of surprise when it is remembered that from April 1 to 26 the miners only worked half time, that for two clear months your pits were wholly idle, and that when work was resumed they were only partially manned with inexperienced miners until nearly the end of the year. These causes will fully account for the high average cost, and in some degree for the deficiency in the sales, but not wholly, as towards the close of the year we were in a position to supply a large quantity of coal, and were not able to sell all that we raised. The other causes to which I attribute the falling off are as follows:—As a matter of course, during the strike our old customers were compelled to obtain the coal they required from other mines, and when we resumed operations did not renew their support, or if they did, only took coal from us for a short time, and then again left us, stating that they could obtain more favourable terms from other companies, whose coal was nearly as good as ours, and better made. It must be admitted that when we first started the pits there was some ground for complaint of the quality of the coal, owing to the want of skill and knowledge on the part of your new miners; but for the last two or three months the coal sent up has been unexceptionable, and we have spared no pains in cleaning and screening it. The last is, therefore, the real reason, and there can be no doubt that even since we resumed supplying coal the competing companies have been underselling us with our old customers. From the facilities which other companies possess for loading vessels in deep water, they have succeeded in drawing from us some of our best customers. Another cause, which has materially interfered with the sale of your coal has been the extent to which some of the other companies have shipped coal on their own account, both to colonial and foreign ports; indeed, the Melbourne and Adelaide markets are, and have been for some time past, completely glutted, and the price, therefore, in them has been correspondingly low. Towards the close of the year I shipped two small cargoes of very good coal to Melbourne on your account, and though they realised the highest price going at the time, we netted for 468 tons only 229*l.* 14s. 6d., or about 9s. 10d. per ton. At the beginning of the present year I sent 400 tons to Adelaide, with what result I have not yet heard; but I do not expect to realise anything like our pit price, though the freight was low, only 17s. From January 1 to April 26 the advertised price of your coal was 14s. 6d., less a discount of 2½ per cent., and it nominally remained at that throughout the year, but during the month of December I was compelled by the slackness of the trade to reduce the price to 14s., less 5 per cent., and on the 9th inst. I again lowered it to 13s. 6d., less 2½, and advertised the reduction in the Newcastle, Sydney, and other colonial papers. Throughout the year I had to pay for lighterage when it was required, and in one or two instances for lifting the coal into the vessel; the former cost 1s. 8d. per ton until November, when it was reduced to 1s. 4d.; the latter cost 7d. per ton. Many of the foregoing facts have already been fully noticed in several of my recent despatches, but I have thought it advisable again to refer to them at some length in this report, in order to bring clearly before you some of the difficulties with which we have had to contend. From a statement of the progress made, and the improvements effected in your colliery works during the past year from Mr. Winship's annual report, both appear to me highly satisfactory; great improvements have been effected in the underground works, and the facts disclosed by the sections recently made by Mr. Winship in the exploring places are most encouraging. On April 26 I discharged all the miners then employed in your pits, under circumstances with which you are already familiar, and between that date and Dec. 31 imported from Victoria and South Australia under written agreement, by which they were bound to repay the cost of their passage, 410 new men to work your mines; of these 190 are still in your employment, 37 have repaid the cost of their passage and left your service, and the remainder, 183, have absconded. In the last quarter of the year, the Peninsular and Oriental Company's agent invited tenders for the supply of coal required by the mail steamers during 1863, and the gas company also invited tenders for the annual supply. The gas contract was obtained by the Messrs. Brown, at 16s. per ton delivered in Sydney, which makes their tender 10s., freight being 6s. per ton. The Peninsular and Oriental contract was also obtained by the Messrs. Brown at the same rate, and as the coal is to be double screened, the price they realise must be much less than 10s. I tendered at the same rate as last year. The African Steam Navigation Company announced that they did not intend to enter into any contract for the present year, meaning to buy their coals in Sydney as they required them; early in January, however, they changed their plans and called for tenders, the coal to be delivered at Morpeth, Newcastle, Beliambi, Wollongong, and Rockhampton; I tendered for the Newcastle supply at 12s. per ton, my offer in all other respects being the same as that of last year. The contract was obtained by the Newcastle Coal and Copper Company, at I believe, 10s. 9d. per ton. The African Steam Navigation Company's engineers openly express their regret that we were unsuccessful, as they consider your coal to be unquestionably the best steam coal. The law charges include an amount of 203*l.* 4s. 4d. on account of the colliery, and due to the prosecution of the miners who would not give up their houses, and those who absconded or refused to work. The amount is higher than I hope to see for the future."

THE ALKALI MANUFACTURE.—Alkali manufacture consumes 1,761,000 tons of raw material, and produces 280,000 tons of finished goods, of the yearly value of 2,500,000*l.* The capital involved in the trade somewhat exceeds 2,000,000*l.* The hands directly and indirectly employed in it are 19,000, involving the maintenance of nearly 100,000 souls. The wages paid are 871,750*l.* per annum. The trade gives employment to a large quantity of shipping, for the estimated tonnage of the raw materials and finished goods is 2,500,000 tons. Some of the most important and most necessary articles of life are dependent for their cost on the production of alkali. Next to oil and tallow the most essential ingredient in the manufacture of soap is caustic alkali. It is also the raw material of the heaviest cost in the manufacture of glass, which is alkali and sand fused together. Alkali is also an important element in the manufacture of paper from other materials besides rags. The use of straw, for example, depends on a solution of silica by caustic soda, which is the chief means of using vegetable fibres. Alkali is also largely used as a cheap soap, and as bleaching powder in cotton bleaching. The cheapness with which alkali is can be manufactured depends on the locality. Four elements enter into the composition of alkali—salt, pyrites, coal, and limestone and chalk. There are very few localities in which these several products are found in close proximity.—*Speech of Mr. H. Vivian in the House of Commons.*

PETROLEUM.—One of the most valuable veins of petroleum yet discovered was lately struck on the Farrell Farm, Old Creek, Verango county, Pennsylvania. The well commenced flowing on Saturday last, the oil spouting up to a height of 50 ft., with a roar like a hurricane, and escaping at the rate of 2000 barrels per day. A stop-cock was got on after much trouble, and the flow can now be regulated to suit the demand. Another flowing well in the vicinity was so affected by the opening of the new well that its yield decreased over 300 barrels per day. The Farrell well, which is about 450 ft. deep, was at last accounts flowing steadily at the rate of 12,000 barrels a day. This, even at the moderate prices ruling at the wells, would yield the owners $3600 a day.—*American Paper.*

GRYLLS'S ANNUAL MINING SHEET,

FROM JUNE 30, 1862, TO JUNE 30, 1863,

Containing the Quantity of Copper Ore sold from each Mine, British and Foreign—Average Price per 21 cwts., and the Amount of Money—the Average Standard, Produce, and Price for the Year, both in Cornwall and Wales—the Total Amount of Ore, Fine Copper, and Money—Each Company's Purchase—and the particulars of Copper Ores sold at the Ticketings in Cornwall, from June 30, 1844, to June 30, 1863.

CORNWALL.

Mines, &c.	Ore.	Amount.	Price.
Agar, Wheal	418	£ 2,599 4 0	£6 4 6
Alfred Consols	1759	6,121 14 6	3 9 6
Anna, Wheal	742	3,919 14 6	5 5 6
Arthur, Wheal	522	1,639 7 0	3 3 0
Hampfylde	380	5,294 9 6	13 18 6
Basset, Wheal	2119	13,717 9 6	6 9 6
Bedford United	2491	10,975 16 0	4 8 0
Botallack	656	4,440 10 6	6 12 0
Brockwood	922	4,588 8 6	4 19 6
Buller, Wheal	802	4,465 13 0	5 11 0
Burra Burra	236	838 8 6	3 11 0
Calstock Consols	171	645 19 6	3 15 6
Camborne Vean	334	1,664 15 6	4 19 6
Carn Brea Mines	1759	6,844 1 6	3 18 0
Carn Camborne	141	661 4 0	4 14 0
Charlotte United	144	773 13 6	5 7 6
Clifford Amalgamated Mines	14349	68,007 2 6	4 15 0
Condurrow	963	5,203 2 6	6 6 6
Copper Hill	1304	5,351 17 0	4 2 0
Craddock Moor	1919	11,177 13 0	5 16 0
Creber	223	744 17 0	3 13 6
Crelake	1413	5,857 4 6	4 2 6
Devon and Cornwall United	1722	5,545 3 6	3 4 6
Devon Great Consols	23510	122,306 7 6	4 16 0
Dolcoath	583	2,790 14 6	4 16 0
East Alfred Consols	306	1,123 4 6	3 14 0
East Basset	1437	9,082 17 0	6 6 6
East Caradon	5670	34,782 10 6	6 2 6
East Carn Brea	2759	16,759 1 0	6 1 6
East Crinnis and South Par	342	1,620 17 0	4 15 0
East Pool	3134	12,329 11 0	3 19 0
East Rosewarne	605	4,822 0 0	7 19 0
East Russell	1201	6,093 11 0	5 1 6
East Wheal Grenville	94	263 11 6	2 16 0
Edward, Wheal	1034	3,684 5 0	3 11 0
Emma, Wheal	1615	6,288 19 6	3 18 0
Falmouth and Sperries	168	531 12 6	3 3 6
Fowey Consols	3943	20,863 19 0	5 6 0
Friendship, Wheal	1690	12,210 7 6	7 4 6
Furzden	371	1,712 9 0	4 15 0
Gawton Copper	307	813 8 0	2 13 0
Grambier and St. Aubyn	99	537 18 0	5 8 6
Great Wheal Alfred	238	513 8 6	2 3 0
Great Brigan	844	2,944 15 0	5 8 0
Great Wheal Busy	5092	14,951 8 6	2 19 0
Great Wheal Martha	1674	2,687 11 0	1 12 0
Great North Downs	255	1,278 13 6	5 0 6
Great South Tolgus	893	7,340 18 0	8 4 6
Grenville, Wheal	815	4,853 1 6	5 19 0
Gunnis Lake (Clitters)	360	1,786 1 0	4 16 0
Gurlyn	217	1,266 0 0	5 16 6
Harriett, Wheal	318	1,310 1 6	4 2 6
Hawkmoor	272	1,203 11 0	4 9 0
Hingston Down	2535	9,506 6 6	3 15 0
Holmbush	1016	7,896 7 6	7 15 6
Kelly Bray	939	3,777 13 0	4 0 6
Lady Bertha	965	2,388 19 6	2 9 6
Levant	1202	6,182 3 0	5 3 0
Margery, Wheal	997	4,433 12 0	4 9 0
Marke Valley	4960	17,664 19 0	3 11 0
Molland	207	1,091 3 6	5 5 6
New Treleigh	546	1,100 14 0	2 2 6
North Basset	440	1,686 11 6	3 16 6
North Crofty	434	1,650 10 6	3 16 0
North Downs	1215	7,415 1 0	6 2 0
North Grambler	325	1,730 7 6	5 6 0
North Wheal Robert	762	3,396 8 0	4 19 6
North Roskear	1274	8,254 17 6	6 9 6
North Treskerby	2605	12,498 4 6	4 11 6
New Wheal Martha	677	1,614 13 6	2 8 0
Par Consols	2306	19,633 8 6	7 0 0
Pendeen Consols	836	3,314 19 6	3 19 0
Perran Mines	122	486 2 0	3 19 6
Phœnix Mines	5498	21,921 16 6	3 17 0
Polmear, Wheal	1143	6,560 7 0	5 13 6
Prideaux Wood	173	530 16 6	3 1 6
Prosper United	1167	4,302 13 6	2 14 6
Prudence, Wheal	111	298 9 6	2 14 0
Rosewarne Consols	540	4,345 9 6	7 17 0
Rosewarne United	313	2,105 6 6	6 14 6
Rose, Wheal	102	435 0 0	4 5 0
Seton, Wheal	3591	19,192 3 6	5 7 0
Sortridge Consols	408	2,563 14 6	6 5 6
South Basset	194	411 0 6	2 4 0
South Bedford	477	1,195 3 0	2 10 0
South Caradon	5788	50,129 1 6	8 13 0
South Carn Brea	151	593 19 6	3 18 6
South Crenver	470	1,336 12 6	2 17 0
South Crinnis	612	2,584 4 0	4 1 0
South Crofty	205	711 10 0	3 9 6
South Frances	2410	14,989 8 6	6 4 6
South Tolgus	2481	13,108 16 6	5 5 6
St. Day United Mines	570	1,662 18 0	2 18 0
Stray Park	379	1,676 12 6	4 8 6
Sundry small mines	1845	8,873 7 0	4 16 0
Tincroft	1171	4,097 19 0	3 10 0
Tolcarne	870	3,862 14 0	4 9 0
Tolvadden	921	4,278 9 0	4 13 0
Treloweth	622	3,495 11 0	5 12 6
Treavean	155	329 14 0	2 2 6
Treworlis	338	1,291 5 6	3 16 6
Tywarnhaile	2311	7,749 0 6	3 7 0
Uny, Wheal	295	2,089 9 0	7 1 6
Vyvyan, Wheal	97	415 10 6	6 6 0
West Alfred Consols	301	428 18 0	1 8 6
West Basset	5479	30,185 10 6	5 10 0
West Caradon	2835	18,883 6 0	6 13 6
West Damsel	2209	8,815 19 6	3 15 6
West Fowey Consols	279	1,890 15 0	6 15 6
West Seton	6575	35,754 1 6	5 9 0
West Stray Park	472	3,106 9 6	6 11 6
West Tolgus	130	624 13 6	4 16 0
West Trevelyan	133	1,044 9 0	7 17 0
Yarner, Wheal	607	1,700 13 0	2 16 0

WALES.

African	159	2,355 5 6	14 5 0
Ballycummisk	357	2,950 4 6	8 5 6
Berehaven	7678	66,662 10 0	8 14 0
Bolivian Ore	536	3,733 3 0	16 2 0
Burnt Ore	107	263 3 0	2 9 0
Canobias	97	1,286 10 0	13 5 0
Cape Copper	720	16,503 14 6	22 18 6
Chili	1573	23,771 6 6	15 2 0
Cobre	10861	139,283 16 0	12 16 0
Cuba	3729	43,340 16 6	11 13 0
Genoa	476	3,996 1 0	8 8 0
Great Northern (Sth. Aus.)	185	3,338 18 0	18 6 6
Kanmantoo	156	6,592 15 0	42 18 0
Knockmahon	5191	44,516 0 0	8 11 6
Laxey	1529	7,055 7 6	4 11 6
La Ventura	95	1,567 10 0	16 10 0
Lisbon	287	5,624 14 0	19 12 0
Liverpool Slag	111	194 5 0	1 15 0
Maria, Wheal	344	10,017 6 6	29 2 6
New Cornwall	171	3,376 16 0	19 15 0
Ookip	670	19,237 4 0	28 11 0
Seville	101	1,341 9 6	13 5 6
Sestri	127	1,329 7 6	10 9 0
South Australian	125	1,706 5 0	13 13 0
Spectakel	100	3,121 15 0	32 4 6
Springbok	71	1,586 11 0	22 7 0
Sundry small mines	1836	21,152 8 6	11 10 6
Valencia	144	3,006 15 0	20 17 6
Victor Emanuel	147	847 19 6	5 15 6
Virgin Gorda	170	1,668 15 0	9 16 6
West Australian Min. Asso.	258	4,149 11 0	16 1 6
Worthing	98	4,423 16 6	45 5 0
Worthing Regulus	124	5,571 4 6	44 18 6
Yudanamutana	125	3,417 0 0	27 7 0

Copper Ores sold in Cornwall, from June 30, 1862, to June 30, 1863.

Copper ores	176,285 t. 0 c.	Average produce	6¾
Fine copper	11,268 t. 17 c.	Average standard	£120 9 0
Amount of money	£872,474 4 6	Average price	4 19 0

Compared with the previous year,

Copper ores—Decrease	10,337 t. 0 c.	Fine copper—Decrease	406 t. 3 c.
Amount of money—Decrease	£104,542 18 0		

Copper Ores sold in Wales, from June 30, 1862, to June 30, 1863.

Copper ores	38,457 t. 0 c.	Average produce	14¼
Fine copper	5,587 t. 14 c.	Average standard	£102 0 0
Amount of money	£464,149 4 6	Average price	12 1 6

Compared with the previous year,

Copper ores—Decrease	5,003 t. 0 c.	Fine copper—Decrease	675 t. 12 c.
Amount of money—Decrease	£89,156 5 6		

Totals in Cornwall and Wales.

Copper ores	214,742 t. 0 c.	Fine copper	16,856 t. 11 c.
Amount of money	£1,336,623 9 0		

Compared with the previous year,

Copper ores—Decrease	15,340 t. 0 c.	Fine copper—Decrease	1,081 t. 15 c.
Amount of money—Decrease	£173,699 3 6		

Copper Ores purchased by Copper Co.—June 30, 1862, to June 30, 1863.

Purchasers.	Ore (21 cwts.)	Copper.	Amount.
Vivian and Sons	28,995	2468 t. 2 c.	£194,550 0 10
John Freeman and Copper Company	12,440	1062 5	85,889 15 2
Pascoe Grenfell and Sons	22,940	2190 17	178,921 3 11
Sims, Willyams, Nevill, and Co.	27,149	2132 16	171,693 3 11
Williams, Foster, and Co., and Crown Co.	28,198	2428 18	196,627 17 8
Mason and Elkington	21,792	1500 11	117,714 4 8
Bankart and Sons	12,468	967 0	77,341 6 7
Copper Miners' Company	19,308	1407 18	110,691 6 10
C. Lambert	16,354	784 1	56,692 15 0
Newton, Keates, and Co.	5,635	246 18	19,509 2 6
Sweetland, Tuttle, and Co.	9,891	574 11	43,873 12 7
Neath Copper Company	8,449	673 8	53,466 2 0
Penclawdd Copper Company	2,204	152 19	11,713 3 1
British and Foreign Copper Company	215	61 11	4,935 8 4
Ravenhead Copper Co.	177	21 10	1,785 1 6
Jennings and Co.	689	133 6	11,269 2 5

Copper Ores sold at the Ticketings in Cornwall, from June 30, 1844, to June 30, 1863.

Date.	Ore.	Money.	Produce.	Standard.
1844	152,667	£ 815,246 9 6	7¾	£109 17 0
1845	167,000	835,550 19 6	7¾	103 10 0
1846	158,913	886,785 1 6	7¾	106 6 0
1847	148,674	830,739 9 0	8	103 12 0
1848	155,816	825,080 2 6	8¼	97 7 0
1849	144,983	716,917 7 0	8¼	92 11 0
1850	150,890	814,037 9 0	7¾	103 19 0
1851	154,223	808,244 1 6	7¾	101 0 0
1852	152,502	826,037 13 6	7¾	106 12 0
1853	180,095	1,124,541 2 0	6¾	136 16 0
1854	180,687	1,153,756 5 6	6¼	140 2 0
1855	188,960	1,212,686 8 0	6¼	141 10 0
1856	209,305	1,283,639 8 6	6¾	140 0 0
1857	198,697	1,276,844 12 0	6¼	139 6 0
1858	183,292	1,083,738 13 6	6¾	135 1 0
1859	183,944	1,072,675 17 0	6¾	133 6 0
1860	180,448	1,079,403 4 6	6½	133 18 0
1861	176,097	1,013,400 5 6	6½	130 1 0
1862	186,662	977,017 2 6	6¼	127 13 0
1863	176,285	872,474 4 6	6¾	120 9 0

Meetings of Public Companies.

NANTEOS MINING COMPANY.

A meeting of gentlemen interested in this property was held at the London Tavern on July 11, for the purpose of considering the propriety or otherwise of passing certain resolutions for the future conduct of the company, and for taking the necessary steps for placing it under the provision of the Companies Act, 1862.

This property, to which so large a share of public attention has of late been directed, was taken up by a company about three years since, and operations were commenced with the intention of thoroughly testing its intrinsic mineral worth. It happened, however, that long before any single point had been proved the funds of the company, which were very limited, became exhausted, and the property was offered for sale by public auction. The purchaser, who is thoroughly acquainted with the district, seems throughout to have been strongly impressed with the opinion that some important result would be realised by the continuance of one particular point of operation—the driving of the adit level. Accordingly, that work was commenced about twelve months since from the side of the hill, which is situated upon the left bank of the Rheidol. The work was energetically persevered with, and about a month since the level broke into a rich vein of ore, some of the produce of which has, upon assay, yielded as much as 39 ounces 19 dwts. of silver and 54 per cent. of lead per ton of ore. The ore ground already laid open—about 60 fms. long—is estimated as being worth 20,000*l.*, but any computation as to the value of this ore formation in depth would appear conjectural, as a shaft has not been sunk deep enough in the locality—if, indeed, in Cardiganshire—to ascertain the productive limits of these deposits.

Upon the proposition of Mr. COLLINS, seconded by Mr. BUSH,

E. D. NOLAN, D.C.L., Ph.D., was called to the chair.

A balance-sheet, made up to the present time, was presented, which showed—Expenditure, 413*l.* 8*s.* 7*d.*; share capital (50 shares upon which the sum of 30*l.* per share has been paid), 1500*l.*; estimated value of the ore ground laid open, 30,000*l.*=21,912*l.* 8*s.* 7*d.*—Value of ore ground laid open, 20,000*l.*; purchase of the mine, 1500*l.*; expenditure, 412*l.* 8*s.* 7*d.*=21,912*l.* 8*s.* 7*d.* The report of the agent was read, as follows:—

July 9.—I wrote you yesterday to say we were driving by the side of the lode, and that we should take it down at the end of the week. We shall begin to-morrow, but to-day, on going into the end, I discovered that west of the slide we have had the point of a splice, or the sharp point of an inverted wedge, as it seemed. I broke it down, and followed it on for several inches; it increased in size up to 4 or 5 in., and turned out to be ore of a more solid kind than I have seen from the first. It was really splendid stuff. This looks encouraging. I shall be able to give you the character of the whole lode by Monday morning's post.—R. WILLIAMS.

The report of Mr. T. Spargo was read, as follows:—

From the balance-sheet and reports laid before the meeting, the shareholders will see that the total amount expended upon the development of the mine is only about 400*l.*—in fact, the monthly expenditure that has led to the opening up of the 20,000*l.* worth of ore has not been more than 40*l.*, without advertising or preliminary expenses. This is accounted for by the peculiar position of the property, and the natural advantages afforded for a speedy and inexpensive development. In referring to the history of the mine, I may here state that I first visited the sett in the latter part of the year 1861, and, under the advice of Captain Matthew Francis, purchased it through the present agent, Captain Williams, at an auction held on the mine in July, 1862. Having fully satisfied myself as to the mineral capabilities of the property, and the certainty of the main lode producing a large quantity of rich silver-lead ore in depth, I came to the determination of driving the adit marked A upon the map; and I must here state that it was done without the assistance of anyone; many of my best friends declined to join me in the enterprise. But mark the progress of its development; on Nov. 12, 1862, the adit to intersect the lode was commenced and continued without cessation until May 23, 1863, when I was greatly pleased by the receipt of a report, stating that a leader containing rich silver-lead ore had been discovered; this seems the first intimation of the good news in store. On May 29, 1863, the agent reports—"We have to-day blasted a hole 13 in. deep in the breast of the end, and have a good orey course for that thickness; but we are neither through the ore nor the lode yet, and, probably, shall not be for some days. This leader part of the lode has a better appearance than anything seen in the stope above, because it is more compact, and better defined; the ore is of a very fine grain and dull shade, but the ground is very hard: I cannot state its value yet, but will say that appearances are very encouraging, and so far highly satisfactory;" and on June 10, he reports the cutting into the lode for 4 feet. On June 13, the following estimate of the quantity of ore ground laid open was forwarded to me:—"I think the lode is worth 1 ton of ore per fm., which will produce from 20*l.* to 25*l.* per fathom; and on calculating on 50 fms. long, we have discovered from 13,000*l.* to 16,000*l.* worth of ore." It will be found that there is a difference of 3000*l.* to 4000*l.* in the estimate; this might be expected, inasmuch as it is impossible for the most experienced person to detect the percentage of silver in the stone, some of the lodes producing 14 ozs. of silver per ton of lead, and others 100 ozs., but the estimates from the different agents agree sufficiently well for all purposes of practical mining. From my first inspection of this lode I was led to believe, from the indications presented, that the course of ore opened upon so near the surface was the precursor of an immense deposit of rich ore; in this my opinion has been fully borne out by the development of the mine. The section shows the position of the wheel, &c., as it will be when in full operation.

The CHAIRMAN congratulated his fellow-proprietors upon the favourable prospects of their enterprise. From all the information he had been able to collect in connection with this undertaking, he felt bound to express his conviction that development was all that was required to render the Nanteos Mine a most profitable undertaking. It was true that he was more accustomed to matters of history than he was to the material interests, yet he hoped his mind was not incapable of being engaged in such matters. He had of late devoted a considerable amount of attention to the undertaking, upon the success of which they had met to congratulate each other upon the present occasion, and for the future development and government of which they were about to adopt certain resolutions. The result of his investigation was, as he had already stated, that it was his unequivocal opinion the Nanteos Mine needed but a judicious development to bring it into a permanently-profitable condition. (Hear, hear.) The unusual facilities of access to the mine, and the ready and expeditious manner in which the produce could be removed, were features of no small importance in its economical development. Proprietors would remember that the success of this enterprise was not an experiment, depending upon the opinion of any practical authority—however good the opinion might be—for they had the actual proved fact of a rich silver-lead mine, and it only remained for the proprietors to be persistent, energetic, and united. (Hear, hear.) Although it might be scarcely pertinent to the purpose of the present meeting, yet he could not but be gratified at the thought that by an energetic development of this mine employment would be given to a great many persons. He then referred to the praiseworthy way in which Mr. Spargo had, at his own cost, for the past 12 months continued a certain point of operation in the mine—the driving of the adit level—and all he (the Chairman) could say was that had it not been for such an undaunted perseverance they would not have been present upon this occasion to talk of the success which had been achieved, and of the still greater success which they hoped to achieve. (Hear, hear.) He concluded by moving a resolution to the effect that the reports and balance-sheet be received and adopted.

Mr. COLLINS had much pleasure in seconding the proposition. He had great confidence in the success of this enterprise, notwithstanding that the efforts of the other company had, for obvious reasons, proved unfruitful. But now all those obstacles had been conquered, and there seemed nothing to prevent the bringing about of a most successful issue, for the Nanteos was a mine that contained ore unusually rich in character, and unusually large in quantity, and at the same time possessed unusual facilites for its cheap and ready removal.

A PROPRIETOR enquired whether the ore ground estimated as being worth 20,000*l.* was available—that is, could it be readily and economically made marketable?—Mr. SPARGO replied that the whole of the ore ground was immediately available, and all that was wanted was the requisite machinery, the cost and erection of which would not exceed 1000*l.*, for the payment of which it was proposed, he believed, to make a call.

Capt. M. FRANCIS stated, that although he was not in any way connected with the company, other than as a shareholder, yet, as he had been invited to be present to afford the shareholders any information as to the geological resources of the district, he might, perhaps, be permitted to mention that mines in the neighbourhood of Aberystwith and Devil's Bridge were commenced long anterior to any period of which there were authentic records. There were still traces to be found about this Nanteos Mine of ancient workings, which, generally speaking, did not extend more than a few feet below the surface. The side of the hill falling rapidly from the excavations towards the River Rheidol, offers great advantages for adit level mining and working by water machinery. It was not known, in the first instance, that the ore of this Nanteos Mine was so rich in silver; and it was to be learnt whether or not a still greater percentage of silver would not be found in the ore that would be taken from deeper points of operation; but they knew from assay that the ore at present discovered yielded more than 39 ozs. of silver to the ton of ore, besides more than 40 per cent. of lead. The district wherein was situated the Nanteos Mine was traversed by several silver-lead veins, some of which had given profits to the extent of 25,000*l.* per annum. An enquiry had been made as to whether the ore ground, the value of which he estimated at fully 20,000*l.*, was available. He (Capt. Francis) could inform the meeting, from personal knowledge, that there was only required the erection of inexpensive water machinery to render the whole of the ore marketable, and to bring the mine into a profitable condition.

Mr. NEWMAN enquired if it had been practically proved that the deposits of ore were productive in depth?—Capt. FRANCIS said the positive fact was, the actual productive limits of the deposits of ore in Cardiganshire had not yet been practically proved. All that was at present known was, that the deepest mines were the richest. Another fact worth adverting to was this—that the value of the mines was not diminished by the depth of the excavations, but rather that the increase in the body of metal in depth rendered those properties more secure and permanent.

The reports and balance-sheet were unanimously received and adopted.

Mr. SPARGO then submitted an analysis of the estimated cost of erecting the necessary machinery, as prepared by the agent, Capt. R. Williams.

It was unanimously resolved that in order to provide machinery for the reduction of the ore, a call of 25*l.* per share be made, payable on or before July 27: and that the undertaking be divided into 4000 shares of 1*l.* each.

Mr. FORWELL had understood that his shares were paid up.

The CHAIRMAN explained that the shares were paid up as far as the purchase of the property was concerned.

A PROPRIETOR could not see what grounds of complaint could be urged, seeing that each one share at present held would be converted into 80 shares of 1*l.* each.

Mr. SPARGO said the company, if it could be so called, was originally divided into 50 shares of 30*l.* each, for the purpose of completing the purchase of the property, but it had now been agreed to divide it into 4000 shares of 1*l.* each. As stated in the circular issued, "the specific object of the present division of shares (50 of 30*l.* each) is to raise the required amount (1500*l.*) to complete the absolute purchase of the property."

Upon the proposition of Mr. BROADHURST, seconded by Mr. BUSH, it was agreed that the company should be registered under the Companies Act, 1862, with limited liability.

The Memorandum and Articles of Association were read, and adopted.

Mr. COLLINS enquired if it was considered by those competent to judge that 4000*l.* would be sufficient for all the requirements of the company?

Capt. M. FRANCIS could not see, considering the prospects of the mine and the ore discovered, that by any possibility there would be required more than 2000*l.* or 2500*l.* The fact was the ore was discovered, so that they had the commodity in a store-house, as it were, waiting for reduction to make it marketable.

Mr. J. Shimmin, E. Broadhurst, and E. D. Nolan, D.C.L., Ph. D., were elected members of the committee.

Capt. M. FRANCIS, in answer to a question, said that in Nanteos they had not only a substantial mine in prospect, but they had a substantial mine in possession—they had the bird in the hand as well as in the bush. For all this, as had been so gracefully alluded to by their worthy Chairman, they were entirely indebted to Mr. Spargo; it was at his cost that the unproductive rock was pierced, and the productive strata reached—it was he who had traversed the boisterous gulf, and had brought the ship to a pleasant island; therefore Mr. Spargo was entitled to their best thanks. (Hear, hear.)

Mr. COLLINS said Mr. Spargo had not been supported, as he most certainly deserved to be supported, by parties connected with the company that last possessed the property, which had now proved so successful.

It was then unanimously resolved that Mr. T. Spargo be appointed the manager of the company, and that the thanks of the shareholders be accorded to him for the zeal and ability displayed in bringing the mine into its present successful position.

Mr. T. SPARGO having in appropriate terms acknowledged the compliment, thanked the proprietors for their mark of confidence in having appointed him the manager of the company, and he assured them that it would be his unceasing aim not only to continue to merit that confidence, but to bring about results that would be profitable to the proprietors and satisfactory to himself. (Hear, hear.) He had been interested in Cardiganshire mines for some time; it was true that, to a certain extent, financially speaking, his efforts had not all been attended with that success which could have been desired—or, in other words (and for his own credit sake he was bound to say it), he had not met with that meed of support to which he thought he was most certainly entitled from those—or rather some of them—who joined him at the commencement. He still pinned his faith to the authority who first directed his (Mr. Spargo's) attention to the mines of Cardiganshire; and he still contended that the elements of success which each of those properties most undoubtedly possessed had in no way been properly developed, and he would take the present opportunity of reiterating his opinion, that if those undertakings had been energetically developed—which could only be done by means of adequate capital—the same success would ere this have been achieved as had already resulted in Nanteos. But all these facts only tended to verify the aphorism—that while success commanded merit, it was not always merit that commanded success.

A vote of thanks to the Chairman was then passed, which concluded the proceedings.

WHEAL LUDCOTT AND WREY CONSOLS MINING CO.

At the meeting of adventurers held at the mine, on Wednesday (Mr. JAMES FIELDING, of Halifax, in the chair), the statement of accounts to the end of April showed:—

Costs for Feb., March, and April	£4474 0 3
Ores sold, raised in March, April, and May	3006 17 1
Leaving loss on the quarter	£1467 3 2

The balance in favour last account, after paying dividend, being 1890*l.* 11*s.* 8*d.*, leaves a balance in favour of the adventurers this audit of 423*l.* 8*s.* 6*d.* May cost has since been paid, 1400*l.*, the ore raised and sold in May being credited in the above accounts, show a balance to the end of May against the adventurers of 976*l.* 11*s.* 6*d.*

The CHAIRMAN reported that he had spent some hours with the purser, and carefully examined the books, and found they were kept clearly and distinctly, and to his entire satisfaction.

The PURSER reported that the merchants' bills passed at the last meeting had not been paid in the usual way for want of funds, in consequence of the loss sustained in the current quarter.—A decided wish was expressed that the committee continue their services for another three months.

Mr. J. C. ISAAC and others pressed for a call to be made to cover the loss of the quarter, alleging as a reason that as when legitimate profits were being made quarterly the shareholders divided it, so a loss now being made this quarter the shareholders should meet it by a call, this being only fair and just, and likely to benefit the property.

The large shareholders, rather than injure the majority of the shares represented at the meeting, being averse to a call, because its need being so entirely unexpected, the matter was not pressed to a division.

Public remarks having been made since the last meeting, reference was made to them and to the accounts. The agent and purser reported every liability was charged at the Oct. meeting, and all the merchants' bills of the previous audit had been paid at the meeting, and the bills presented receipted. The balance then shown in favour of the adventurers being 1037*l.* 18*s.* 6*d.*, after paying 2400*l.* dividends, there had been incurred August cost (say) 1400*l.* and ores unsold 1500*l.*, which would show a balance of assets over liabilities to the day of meeting of 1187*l.*, justifying the payment of a dividend. At the following meeting, April 9, a profit was shown of 1538*l.* 2*s.* 2*d.*, and only 600*l.* was divided, there being then no ore on hand for sale, as at the previous meeting. The balance to the day of meeting being reckoned as above, left (say) assets over liabilities about 490*l.* Remarks were passed as to the accounts presented this day, a loss of 1467*l.* 3*s.* 2*d.* being shown, and the balance appearing to be 423*l.* 8*s.* 6*d.* in favour of adventurers. Add one month's cost (May) 1400*l.*, and no ores ready for sale against May cost, showed a balance against the mine of 976*l.* 11*s.* 6*d.* It was stated that the cost of the month previous to the meeting may always be reckoned as in part to be met by the ores below and on the floors.

Allusion was made to a statement in the *Mining Journal*, signed "R. M.," calling in question the correctness of a letter in the same journal the previous week; it was shown to have been uncalled for, the debt being less than 5*l.*, for goods that had not been charged, because of the irregularity in receiving the goods at the mine, or of the invoice being mislaid by the agent.

Reference was also made by Mr. ISAAC to the duties of the committee, when it appeared they were appointed, with the purser, for the purpose of having a banking account, and becoming security to the bank for an overdrawn account to the extent of 800*l.* It was argued that the entire management was uncontrolled, and in the hands of Captain Knapp, and that he ought to show where the loss had been during the past quarter, and to satisfy the shareholders that a similar loss would not be sustained during the current one, the cost of which for two months having been made, and where his hopes for the future lay.—Capt. KNAPP replied his report would be before the meeting; but with no silver for sale, and depending on sales of lead, he did not think the present three months' cost would be met by 1000*l.*, unless an improvement in the lead lode took place, or a fresh discovery of silver should be made. The following report was read:—

July 15.—Willcock's shaft is sunk 4 fms. under the 106 fm. level; the ground in the shaft is still hard, not having got through the elvan; we expect in a fathom or two more sinking to be out of it, when an improvement in the ground will probably take place. The lode in the 106 north is 2 feet wide, somewhat disordered, and producing stones of lead only; we expect an improvement in this end as we approach the cross-course, and also to find silver when we reach it (the cross-course). There is a promising lode for silver gone down in bottom of the 96, and, judging from appearances here, we expect to find silver under. The lode in the 106 south is 3 ft. wide, and will produce 8 cwts. of lead per fm.; we decidedly expect an improvement in this end on getting out of the elvan, and which we hope to do on driving a fathom or two further, as we shall then be under the rich run of ground driven through for a considerable distance in the level above. The stopes in back of this level will produce on an average 4 cwts. of lead per fm. The 96 south has been driven further east 40 fms. through a rich piece of ground, but being near the boundary, and becoming poor, is now suspended; the stopes in back of this level will produce on an average 7 cwts. of lead per fathom. The 96 north, since passing through the great cross-course, has been a perfect blank until recently, when an improvement has taken place; the lode is now 3 feet wide, and will produce 4 cwts. of lead per fm. The rise in back of this level will produce 6 cwts. of lead per fm.; this rise will open and make available a good piece of ground, as in the level above for a distance of 70 fms. in length a good lode has been driven through. The stopes in back of this level will produce on an average 4 cwts. of lead per fm., and in back of the 84 they will produce 5 cwts. of lead per fm.—Western Lode: We have not yet intersected this lode to the north of the great cross-course, we are now in about the distance we calculated when we began to reach it; the end is becoming wetter as we proceed, and hope we shall not be long before we intersect it. The stopes in back of the 60, south of No. 2 crosscut, will produce 4 cwts. of lead per fm. The lode in the 50 south is 2¼ feet wide, of a promising appearance, and producing stones of lead. The stopes in back of the 38 south will produce 5 cwts. of lead per fm.—North Mine: Wrey shaft is expected to reach a 130 fm. level in about six weeks from this time, the deepest level at present being the 106; this is a point of great importance as regards the future prospects of the mine. The 106 has been driven a considerable distance through a good lode, and at the time appeared to be only skimming the upper part of an improved channel of ground; we, therefore, as well as for other considerations, thought it best to sink the shaft a good depth before we again cut into the lode, and which we have now nearly succeeded in doing 24 fms. deeper than the 106: should this operation turn out agreeably with indications in the 106, the high reputation of Wheal Ludcott and Wrey Consols will again be established. We have suspended all other tutwork operations in this part of the mine, excepting a cross-cut in the 12 towards a lode or branch discovered some time ago at the surface; we calculate only a few fathoms further to reach this object. There are eight tribute pitches working here, at 11*l.* per ton. From the above it will be seen that the mines are not so productive as for some time past, whilst, at the same time, the prospects are no less encouraging and satisfactory, and I think, when fully developed, will lead to good results and a lasting mine. It should be borne in mind that the mines have yielded immense returns, and are still comparatively shallow, only about 100 fms. deep where wrought on in the lode, whilst Mary Ann and Trelawny, on a parallel lode, have already attained to about twice that depth, and are still very productive and profitable mines. The loss on the three months' working is very considerably, augmented as it has been by several hundred pounds for new materials, &c., which, of course, will not occur again. The current cost of the mine has also been reduced by several hundred pounds per month, and will, if possible, be brought within the limits of our returns.—R. KNAPP.

There are over 700 gold and silver mining companies in Nevada territory, with capitals ranging between $250,000 to $5,000,000.

BARCLAY'S PATENT STEAM AND WATER PRESSURE AND VACUUM GAUGES.

These GAUGES are MADE to INDICATE ANY PRESSURE from ONE to TWENTY THOUSAND POUNDS upon the SQUARE INCH.

EACH GAUGE is GUARANTEED FOR FIVE YEARS.

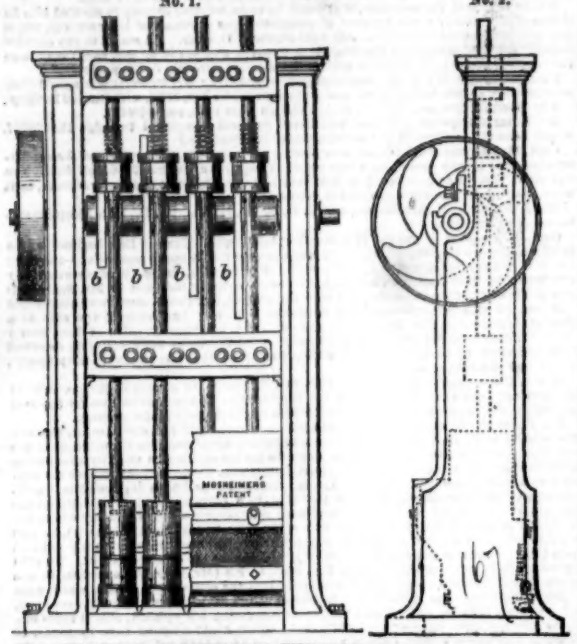
PATENTEE AND MAKER,
ANDREW BARCLAY,
ENGINEER,
KILMARNOCK.

166

MOSHEIMER'S PATENT STAMPS.

MANUFACTURED BY DUNN AND CO., SALFORD, NEAR MANCHESTER.

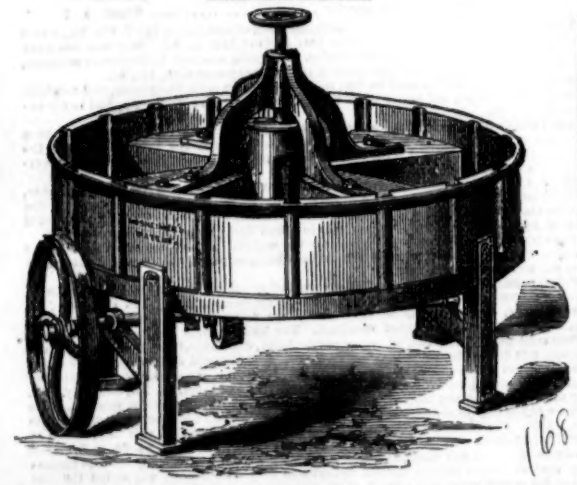
No. 1. No. 2.



These STAMPS are CONSTRUCTED ENTIRELY of IRON, and are ADAPTED for CRUSHING EVERY DESCRIPTION of ORE, MORE ESPECIALLY for REDUCING GOLD ORES, as in consequence of the mortars (coffers) being solid NONE of the PRECIOUS METAL can be LOST. They may be erected on either a stone or wood foundation, are more durable, the wear and tear being much less, and CRUSH TWENTY-FIVE PER CENT. MORE than the ORDINARY STAMPS. Several sets may be seen in the gold district, near Dolgelly.—For particulars, apply to Mr. Jos. MOSHEIMER, Dolgelly, North Wales.

MOSHEIMER'S PATENT GOLD AND SILVER AMALGAMATING MACHINES.

MANUFACTURED BY DUNN AND CO., SALFORD, NEAR MANCHESTER.



168

This AMALGAMATOR is the MOST ECONOMICAL and PERFECT MACHINE in use, and being SIMPLE in CONSTRUCTION, and REQUIRING NO FOUNDATION, it may be put up in a few hours. More gold can be extracted by this amalgamator than by any other, this having been sufficiently proved by the gold extracted from the tailings worked in this machine from the Welsh gold mines. The process is both mechanical and chemical, and the amount of ore worked by each machine is about 1 ton per day.—For particulars, apply to Mr. Jos. MOSHEIMER, Dolgelly, North Wales.

CREASE'S PATENT EXCAVATING MACHINERY,

for SUPERSEDING the SLOW and EXPENSIVE USE of MANUAL LABOUR in SINKING SHAFTS, DRIVING LEVELS, TUNNELLING, &c., is guaranteed to drive through any rock of average hardness at a minimum rate of 1 fm. per diem, and to sink shafts at the rate of 2 fms. in three days.

Mr. CREASE will undertake contracts for sinking shafts, driving levels, &c., at an enormous reduction of time and great saving in cost.

Applications to be addressed (for the present) to the patentee, Mr. E. S. CREASE, Dolgelly, North Wales.

By providing the power of calculating the time and cost to explore a certain depth and extent of ground, speculation in mining will be assimilated to commercial pursuits, with this unmistakable advantage—that when the ground has been once carefully and judiciously selected, and operations properly and systematically carried out for its development, there would be far less chance of unsatisfactory results than are met with by merchants and manufacturers in the usual routine of their business. As this important invention must beneficially interest the landowners, mine proprietors, merchants, and miners, we opine it will meet with immediate adoption.—*Mining Journal.*

BASTIER'S PATENT CHAIN PUMP.

APPARATUS FOR RAISING WATER ECONOMICALLY, ESPECIALLY APPLICABLE TO ALL KINDS OF MINES, DRAINAGE, WELLS, MARINE, FIRE, &c.

J. U. BASTIER begs to call the attention of proprietors of mines, engineers, architects armers, and the public in general, to his new pump, the cheapest and most efficient ever introduced to public notice. The principle of this new pump is simple and effective, and its action is so arranged that accidental breakage is impossible. It occupies less space than any other kind of pump in use, does not interfere with the working of the shafts, and unites lightness with a degree of durability almost imperishable. By means of this hydraulic machine water can be raised economically from wells of any depth; it can be worked either by steam-engine or any other motive power, by quick or slow motion. The following statement presents some of the results obtained by this hydraulic machine, as daily demonstrated by use:—

1.—It utilises from 90 to 92 per cent. of the motive power.
2.—Its price and expense of installation is 75 per cent. less than the usual pumps employed for mining purposes.
3.—It occupies a very small space.
4.—It raises water from any depth with the same facility and economy.
5.—It raises with the water, and without the slightest injury to the apparatus, sand, mud, wood, stone, and every object of a smaller diameter than its tube.
6.—It is easily removed, and requires no cleaning or attention.

A mining pump can be seen daily at work, at Wheal Concord Mine, South Sydenham, Devon, near Tavistock; and a shipping pump at Woodside Graving Dock Company (Limited), Birkenhead, near Liverpool.

J. U. BASTIER, sole manufacturer, will CONTRACT to ERECT his PATENT PUMP at HIS OWN EXPENSE, and will GUARANTEE IT FOR ONE YEAR, or will GRANT LICENSES to manufacturers, mining proprietors, and others, for the USE of his INVENTION.

OFFICES, 63, DEAN STREET, SOHO SQUARE.
London, March 21, 1859. Hours from Ten till Four. J. U. BASTIER, C.E.

170

LEICESTER AND CO. (late Leicester, Brache, and Teague),

CONSULTING MINING ENGINEERS AND SURVEYORS, AND GENERAL MINING AGENTS, MELBOURNE, VICTORIA, PROCURE MINING LEASES on ELIGIBLE TERMS from the GOVERNMENT of VICTORIA and NEW SOUTH WALES, on receipt of a remittance for £200, to cover costs of lease, survey and report, &c. Messrs. LEICESTER and Co. OFFER to TAKE the MANAGEMENT of MINING COMPANIES, and PROVIDE OFFICE ACCOMMODATION, for a percentage on the profits of the company.

For further particulars, apply to Mr. RICHARD MIDDLETON *Mining Journal* office, 26, Fleet-street, London, E.C.

All remittances must be made through our bankers, the Union Bank of Australia.

171

BY HER MAJESTY'S ROYAL LETTERS PATENT.

GEORGE SPILL & CO.'S IMPROVED MACHINERY BELTING,

WARRANTED NOT AFFECTED BY HEAT, WATER, OR GREASE, AND MADE TO ANY LENGTH IN ONE PIECE.

PRICES PER FOOT RUN.

Inches wide.	1	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
No. 1 substance.	0 3	0 4½	0 6	0 7½	0 9	0 10½	1 0	1 1½	1 3	—	—	—	—	—	—	—	—
No. 2 substance.	—	—	—	0 11½	1 1½	1 4	1 6	1 7½	1 9	1 10½	2 0	2 3	2 6	2 9	3 0	—	—
No. 3 substance.	—	—	—	—	1 6	1 7½	1 9	1 10½	2 0	2 3	2 6	3 0	3 6	4 0	4 6	5 0	5 6

These Beltings (unlike the ordinary manufactures) are woven into one solid substance from the best flax yarn, and saturated with a compound to consolidate them, which is not liable to decomposition. They possess extraordinary strength, as the following certificate will verify, which renders them particularly adapted for paper and saw mills, threshing machines, grain elevators, foundries, machine shops, &c.

COPY OF CERTIFICATE, FROM THE POST OF LONDON CHAIN CABLE PROOF HOUSE.

THIS IS TO CERTIFY, that the tensile strength of Machinery Belting, manufactured by GEO. SPILL AND CO., of HACKNEY WICK, LONDON, as proved by my chain cable testing machine, at Rotherhithe, to be as follows, viz.:—

No. 1 substance	5 in. wide, broke at the strain of	6,272 lbs., or, for every inch of width,	1254 lbs.
No. 2.....	5 in. wide,	7,448 lbs., or, for every inch of width,	1489 lbs.
No. 3.....	10 in. wide,	16,663 lbs., or, for every inch of width,	1666½ lbs.
A stout leather band.....	4 in. wide,	2,100 lbs., or, for every inch of width,	525 lbs.

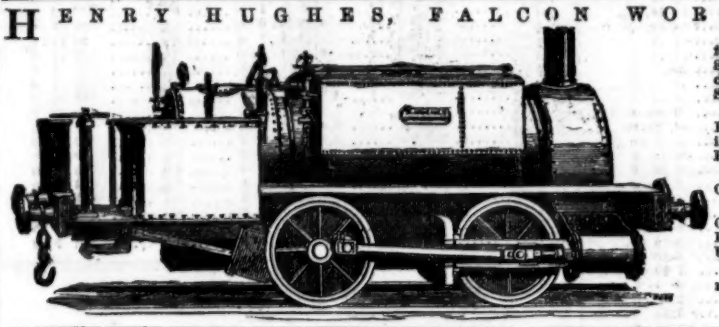
July 9, 1863. (Signed) WM. MITCHESON.

Manufacturers of India rubber. Double texture and oiled waterproof cart, rick, and wagon sheets, made up at price per square yard. Farmers' gaiters, buskins, and farm labourers' waterproof garments.

WORKS, HACKNEY WICK, N.E.;
DEPOT, 149, CHEAPSIDE, E.C., LONDON, AND 9, HIGH STREET, BRISTOL.

177

HENRY HUGHES, FALCON WORKS, LOUGHBOROUGH.



This LOCOMOTIVE ENGINE has been DESIGNED expressly for CONTRACTORS and MINERAL RAILWAYS. It is VERY STRONG in EVERY PART, and, being mounted on small wheels close together, will MOUNT STEEP GRADIENTS and TURN SHARP CURVES.

The BOILERS are of the BEST PLATES, with fire-boxes of Low Moor, are clothed with hair felt, lagged and covered with sheet iron, and PROVED to a PRESSURE of TWO HUNDRED POUNDS PER SQUARE INCH.

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The FITTINGS consist of BUFFERS, POWERFUL BRAKE, GIFFARD'S INJECTOR, ROSCOE'S OILING APPARATUS, PRESSURE GAUGE, WATER GAUGE, and BLOWER to GET UP STEAM.

The engines are all tried before leaving the works, and an experienced man sent with them free of cost.

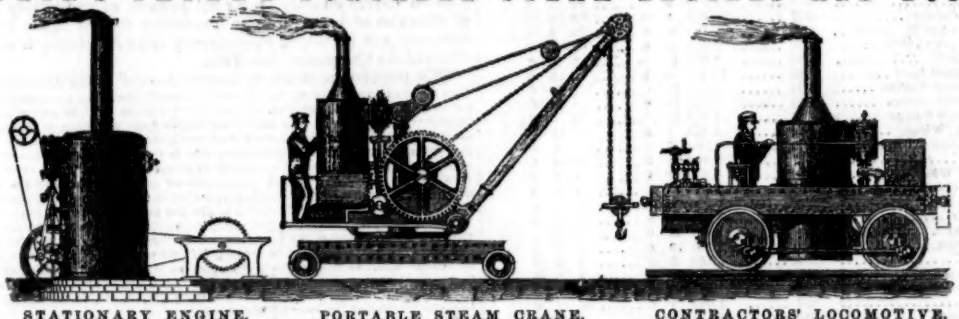
Full specification on application.

10 in. cylinders, 15 in. stroke, price £500.

178

Prize Medal, International Exhibition, 1862.

CHAPLIN'S PATENT PORTABLE STEAM ENGINES AND BOILERS.



STATIONARY ENGINE. From 1 to 30 horse power.
PORTABLE STEAM CRANE. 1 to 30 tons.
CONTRACTORS' LOCOMOTIVE. 6 to 27 horse power.

From the STRENGTH, SIMPLICITY, and COMPACTNESS of these ENGINES, they are now extensively used for general purposes; also in situations where steam-engines of the ordinary construction cannot be applied.

STATIONARY ENGINES,—require no building in, nor chimney stalk, and with our patent forced combustion apparatus will burn inferior qualities of coal, wood, or peats. These engines are specially suited for shipment, and may be packed inside the boiler, to economise freight.

PORTABLE STEAM CRANES,—for wharf or railway, with wrought-iron carriages on wheels, link motion, foot brake, &c., all under the easy control of one man; the larger sizes hoist, lower, and turn round in either direction by steam.—*These Cranes were selected by H.M. Commissioners for receiving and sending away the heavy machinery at the International Exhibition of* 1862.

CONTRACTORS' LOCOMOTIVES,—are adapted to work on rails or tramways, of a guage from 2 feet upwards. They are complete and efficient locomotives, simple in construction, and the working parts easily got at for repair. They draw heavy lodes at reduced speeds. These engines are usually sent in one package, ready for work on arrival.

LIGHT PORTABLE HOISTING, WINDING, AND PUMPING ENGINES, ETC.

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Several engines of each class KEPT IN STOCK, for SALE OR HIRE; and all our manufactures GUARANTEED AS TO EFFICIENCY, MATERIAL, and WORKMANSHIP.

Parties are cautioned against using or purchasing imitations or infringements of these patent manufactures.

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International Exhibition, 1862—Prize Medal.

JAMES RUSSELL AND SONS

(the original patentees and first makers of wrought-iron tubes), of the CROWN PATENT TUBE WORKS, WEDNESBURY, STAFFORDSHIRE, have been AWARDED a PRIZE MEDAL for the "good work" displayed in their wrought-iron tubes and fittings.

Warehouse, 81, Upper Ground-street, London, S.

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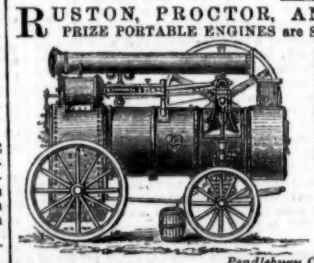
Prize Medal, International Exhibition, 1862.

RUSTON, PROCTOR, AND CO.'S CELEBRATED PRIZE PORTABLE ENGINES

are SPECIALLY ADAPTED for WINDING, PUMPING, SAWING, &c. These engines have, in public competition, won the highest honours. For ECONOMY in WORKING, LARGE ALLOWANCE of POWER in CYLINDER AREA and PROPORTIONATE SIZE of BOILER, STRENGTH of CONSTRUCTION, HIGH FINISH, and GENERAL EFFICIENCY, they are unrivalled, having recently been

AWARDED THIRTEEN GOLD, SILVER, and BRONZE PRIZE MEDALS,
And numerous other prizes.



Messrs. A. Knowles and Sons write:—

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GENTLEMEN,—We beg to inform you tha twe have now in use the portable engine of 8 horse power you supplied us with, and have great pleasure in informing you that it works well, and we are much pleased with the workmanship and finish of it.

We are, yours respectfully, ANDREW KNOWLES AND SONS.

Illustrated, descriptive, and priced catalogues may be had on application to the Sheaf Ironworks, Lincoln.

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The SUPERIOR QUALITY of GARNOCK, BIBBY, AND CO.'S WIRE-ROPE was FULLY PROVED by a RIVAL MANUFACTURER at the LIVERPOOL PUBLIC TESTING MACHINE, on the 29th of October, 1860, on which occasion GARNOCK, BIBBY, and Co.'s ropes were found to be the STRONGEST of all the TWELVE SAMPLES from different makers then tested, as reported in the papers of the day. For example:—

(Certified by Mr. William Macdonald, superintendent.)

Sizes.	Garnock, Bibby, and Co. Tons c.	Corresponding sizes from other manufacturers. Tons c.	Tons c.
2½ in.	18 5*	16 10	11 10
2⅛ in.	8 15*	7 15	5 0

Remaining sizes with similar results.

* Samples taken promiscuously from stock by a rival manufacturer's agent.

GARNOCK, BIBBY, AND CO.,
SWAN HEMP AND WIRE ROPE MANUFACTURERS,
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FLAT and ROUND STEEL and IRON WIRE ROPES for MINES, &c., of SUPERIOR QUALITY.

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MANUFACTURERS OF PATENT TUBULAR TUYERES.

The PATENT TUBULAR TUYERE possesses GREAT ADVANTAGES over the ORDINARY TUYERES, both for its DURABILITY and EASY WORKING. A current of cold water going direct to the nozzle prevents their destruction, however much they may be exposed to the fire.

We repair them at half the first cost, making them equal in size to new ones, all parties returning them carriage paid.

No. 1 tuyere, 16 in. long			28s. each.
No. 2	" 18	"	32s. "
No. 3	" 20	"	36s. "
No. 4	" 22	"	40s. "
No. 5	" 24	"	44s. "

Delivered at Chesterfield station. Terms, nett cash quarterly.

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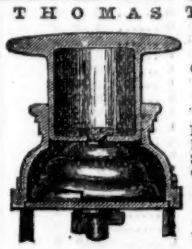
CAST STEEL PISTON RODS, CRANK PINS, CONNECTING RODS, STRAIGHT and CRANK AXLES, SHAFTS, and
FORGINGS of EVERY DESCRIPTION.



DOUBLE SHEAR STEEL,	FILES MARKED
BLISTER STEEL,	T. TURTON.
SPRING STEEL,	EDGE TOOLS MARKED
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Locomotive Engine, Railway Carriage and Wagon Springs and Buffers.

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